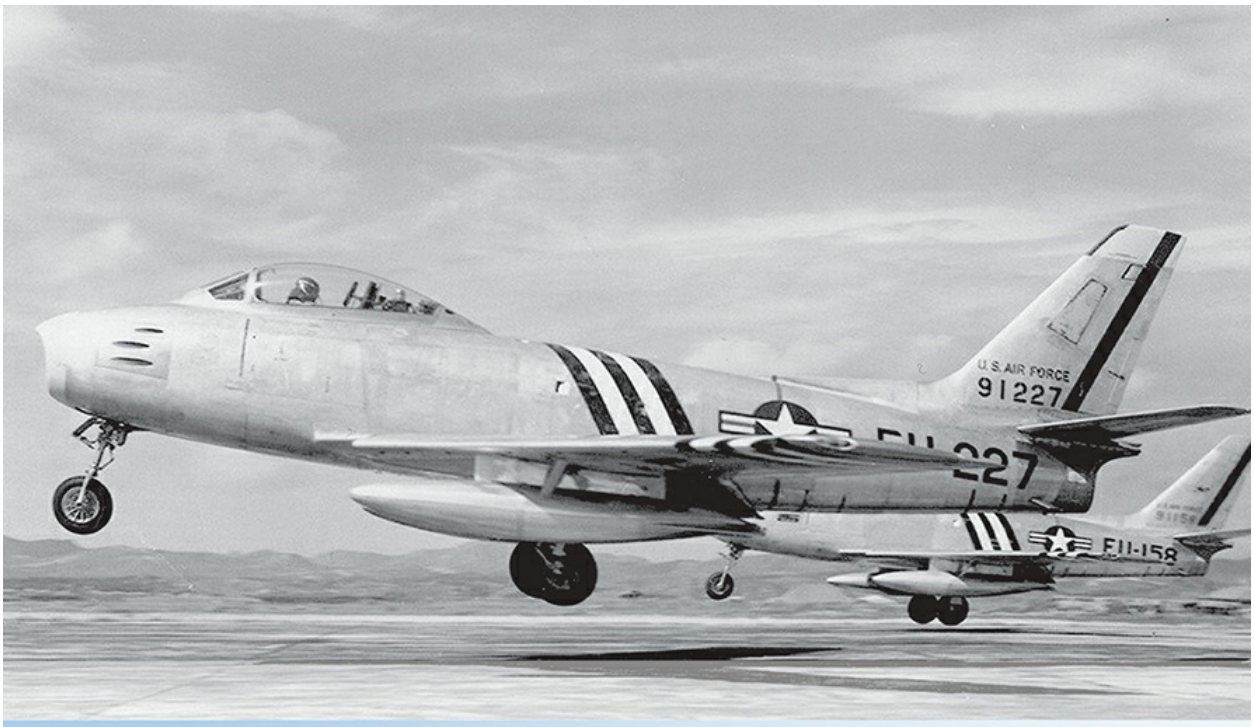
DOGFIGHT

F-86A Sabre

Korea 1950–51

Peter E. Davies



DOGFIGHT 4

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CHAPTER 1

IN BATTLE

"My element was flying at about 25,000ft over the eastern end of MiG Alley," recalled Lt Col Bruce Hinton, CO of the 4th Fighter Wing's 336th Fighter Squadron (FS). "There were lots of MiGs everywhere, and I soon spotted a 'loner' maneuvering in the swirl of the fight. Suddenly, the MiG turned away from the battle and headed north. I began to close the range, getting it down to a little less than 1,500ft. With the pipper on his tail, I was ready to hammer him. He was all mine!"

On June 17, 1951, both 4th FW F-86A squadrons – the 334th FS, led by Lt Col Glenn Eagleston, and the 336th FS, led by Lt Col Bruce Hinton – were flying one of their regular "MiG sweeps" just south of the Yalu River, hoping that MiG-15s would rise from Antung airfield to the north of the river to challenge them. Although worsening weather had begun to reduce their sortie rate for June, the 4th FW had still flown 427 MiG sweeps and claimed ten MiGs, with 25 damaged, in the first two weeks of the month. On the 17th, Hinton was about to bring down his third MiG – six months earlier, on December 17 1950, he had been credited with destroying the first MiG-15 to

fall to an F-86:

> Just as I started to pull the trigger, a Sabre appeared between me and the MiG I was about to clobber. He was flying at 90 degrees to my direction of flight and he wasn't alone! About 500ft behind him was a MiG with a red nose and stripes on the fuselage. "Casey Jones"! He was pounding the Sabre with cannon fire. As both airplanes flew directly between "my MiG" and myself, I wondered how we had missed a mid-air collision.

The red-striped MiG-15bis and its pilot had achieved a similar status in Sabre pilots' minds to that of the mythical MiG-21 pilot "Colonel Toomb" during the Vietnam War, some 15 years later. Both were assumed to be highly skilled Russian "Honcho" instructor pilots with prodigious combat records. Various Soviet pilots were thought to be "Casey Jones," named after the skilled Illinois railwayman who died in his ten-wheeled engine *Cannonball* while averting a catastrophic collision.

In this case, the "trains" were the MiG formations taking off from Manchuria to intercept air strikes being mounted by Allied aircraft. "Casey" was assumed to be flying solo, coaching Chinese pilots in combat while sitting "on the perch" ready to pick off any isolated Sabres himself. On June 17, "Casey" was in fact high-scoring ace Capt Sergey Kramarenko, CO of the 2nd squadron of 176th Guards Fighter Air Regiment (GvIAP) who was managing an interception by six MiG-15bis. Spotting three Sabre targets, he attacked F-86A 49-1281. Lt Col Hinton saw cannon strikes on it:

> As the two aircraft passed in front of me I could see the MiG fire and its shells hit the Sabre, with flames and sparks marking the strikes on the fuselage. Pieces of the F-86 were flying through the air, some of them being very large. One unassailable rule we had was that no MiG was worth losing a pilot over. The Sabre was on fire and I broke off a certain kill to try and take that MiG off of it. I had no idea who was flying that Sabre, but I knew he was in "deep kimchi."

Maj Bruce Hinton flew P-80A Shooting Stars with the 4th FG from August 1947, transitioning to the F-86A-1 in May 1949 and taking four F-86A-5s to Japan as part of Operation *Strawboss* in November 1950 for combat duties in Korea. As CO of the 336th FS, now-Lt Col Hinton led the first seven F-86As, newly painted with "invasion stripes," to Kimpo on December 13, 1950. Four days later, in a mission labelled "CAP 04 Baker," he scored the Sabre's first MiG kill. (USAF)

The F-86 pilot was none other than Lt Col Glenn Eagleston, the somewhat austere, stern CO of the 4th FW from May 1951. A World War II ace with 18.5 aerial victories to his name, Eagleston had also claimed two MiG-15s

destroyed, one probably destroyed and five damaged since arriving in Korea in December 1950.

As Hinton pulled his Sabre into a very tight turn 1,000ft above the fighting pair, he noticed that the MiG pilot had overshot Eagleston's jet and was reversing for another attack:

> The Sabre had lost most of its airspeed and appeared to be just hanging there, waiting for the inevitable. Suddenly, the MiG started to pull up. He'd seen me coming and was now starting a head-on pass against me. We passed head-on about 50ft apart.
>
> At that point we both tried to use all we had to gain some kind of advantage over the other. We went into a Lufbery circle in which I had a slight advantage, but not enough to get into a good firing position. I started a vertical yo-yo, with a slight reduction in my speed to increase my turning rate. It began to work and I started to close. The maneuvering "Gs" were extreme – so much so that my wingman left part-way through, later telling me that he'd become airsick.

335th FS F-86A-5s line up on Suwon's tire-eroding pierced steel planking parking area in June 1951. 49-1158 had been reassigned to the 4th FW from the 33rd FIG in 1950 and survived the war, but 49-1276 was downed by MiG-15 pilot Snr Lt Boris Obraztsov of 176th GvIAP on June 22, 1951 and its pilot, 1Lt Howard Miller, killed. 49-1251 and 48-261 also survived the conflict, but 49-1236 (far end) fell victim to ace Snr Lt Dmitriy Samoylov of 523rd IAP on October 24, 1951. (USAF)

At this point I decided to try a high angle-off burst of fire. I had a little inside advantage by now with "Ol' Casey" passing in front to me at about 60 to 70 degrees angle off. As we approached the tight end of the circle, I watched over the leading edge of my wing for him to appear. When he did, I hauled back on the stick to bring my nose to bear on him. As he passed in front of me, I held the trigger down and gave him a good burst. On the next orbit I did the same thing. This time "Ol' Casey" had to fly directly through the spray of my six 0.50-cals. That second burst got his attention real quick and he suddenly broke away and dived towards the Yalu, easily pulling away from me.

Having scored some hits, Hinton broke off, but Kramarenko described in his autobiography *Air Combat Over the Eastern Front and Korea* how he used a "last resort" tactic by deliberately leading Hinton and his wingman into the heavy flak defending the Yalu hydroelectric plant – a trick that was often used later in Vietnam by Soviet pilots. Kramarenko himself was lucky to survive a barrage of AAA shells.

With the MiG threat now gone, Hinton "started looking for the stricken F-86. I found him sort of floating at about 20,000ft. The fires had gone out, but he had some big holes in the fuselage. The aft section was holed and the left gun bay door and all three 0.50-cals had gone."

The F-86's six machine guns were mounted in two bays on either side of the pilot. They made the cockpit somewhat narrower, and gun firing caused considerable noise, vibration, and smell in the cockpit. On this occasion, their barrier effect undoubtedly saved Eagleston's life when a heavy 37mm cannon shell exploded against the gun bay. The shell destroyed part of the intake trunking and damaged the engine and hydraulics. Two 23mm shells exploded within the aft fuselage as well. Hinton attempted to communicate with Eagleston:

> I tried talking to him, but his radio had been hit by another cannon shell. We were flying at about 0.7 Mach and he was steadily losing altitude. Pulling up next to him, I finally got his attention and signaled for him to head towards the Yellow Sea and get ready to eject.

American search and rescue forces were able to rescue numerous pilots who ditched or bailed out in that area, using naval vessels, SA-16 Albatross amphibians, and H-19 Chickasaw helicopters of the 581st Air Supply and Communications Wing at Seoul – the latter had been forward deployed to captured Cho-do Island in the Yellow Sea. Their record recovery time was for a pilot who had been in the water for only 19 seconds. Sabre aces Maj Frederick "Boots" Blesse and Capt Joseph McConnell were both rescued in this way. Eagleston, however, still unrecognized by his Sabre-flying guardian, was not proposing to take Hinton's advice. "I'll never forget the pilot in that cockpit violently shaking his head, 'No!' I was sure he had to be one of the new lieutenants, but couldn't figure out his disregard of a possible lifesaving instruction."

High-scoring World War II ace and 4th FW CO Lt Col Glenn Eagleston surveys the damage caused his F-86A-5 49-1281 by Capt Sergey Kramarenko's 37mm hit on his left gun bay. The 0.50-cal. machine guns luckily absorbed much of the impact. Two 23mm cannon shell hits also severely damaged the Sabre's engine and hydraulic systems. (USAF)

Capt Sergey Kramarenko, CO of the 2nd squadron of 176th GvIAP, was credited with 13 victories (including nine F-86s) during the Korean War. Lt Col Eagleston's Sabre was hit three times by cannon fire from Kramarenko's MiG-15bis on June 17, 1951. (Tony Holmes Collection)

Hinton shepherded Eagleston southwards, avoiding the AAA traps that Kramarenko had tried to lead them into and calculating a flightpath that would get them to K-13 Suwon airfield before the fuel ran out:

It took forever, but we finally made it to friendly territory. I called K-13 tower and informed them that I was bringing in a cripple, and to clear the runway and alert the meat wagon [ambulance] and fire trucks. He was going to have to make a wheels-up landing as the MiG had shot out all the controls.

Flying a tight formation with the wounded F-86, I came down the final approach right beside him. The Sabre slowly settled over the runway before touching down with a jolt. I watched the pilot's head banging back and forth in the cockpit as he rode that airplane down the runway like a bucking bronco. The Sabre slid to a stop off the end of the runway in a big cloud of dust. I poured on the coal, went round, landed and rolled to a stop by the busted F-86. The airplane was a wreck. Not only was the engine hit but the throttle controls were smashed by cannon fire. The left fuselage was a sieve, with some very large holes around the cockpit. It was only then that I learned that the pilot was my very close friend Glenn Eagleston.

Deemed to have been damaged beyond repair, F-86A-5 49-1281 was cannibalized for parts and the remaining hulk set up as a decoy for the "Bedcheck Charlie" Po-2 biplanes of the North Korean People's Air Force (NKPAF) that regularly dropped small bombs on Allied airfields, causing a surprising amount of damage. Eagleston eventually flew 84 missions in Korea, adding seven damaged MiGs and one probable to his two claimed victories before returning to a US posting in September 1951.

CHAPTER 2

SETTING THE SCENE

The Korean War, often called the "forgotten war," involved brutal warfare by massive infantry forces, a US death toll close to its losses in the nine-year-long Vietnam conflict, and more than a million Korean casualties. An unknown number of Chinese volunteers were also sacrificed as Kim Il-sung's North Korea, with Soviet and Chinese support, attempted to unite Korea under communist control.

The brunt of the USAF's air campaign to protect United Nations (UN) troops was borne by pilots flying obsolescent F-51D Mustang and B-26C Invader ground attack aircraft from primitive airfields, together with the newer jet-powered F-80C Shooting Stars and F-84E Thunderjets. They took on the massed infantry and AAA of the Korea People's Army (KPA) and Chinese People's Volunteer Army (PVA) on a daily basis. Early in the war, as UN troops were driven back into the southeast corner of Korea and USAF bases were overrun, US Navy aircraft, often flying from ice-covered carrier flightdecks, became the primary providers of much needed air support.

However, the new element to air warfare in Korea was the opposition of jet

fighters from either side, battling for air superiority. In stratospheric clashes, pilots adapted World War II air-fighting tactics to faster, higher-flying fighters. Aces were created (25 for the 4th FW alone) as USAF, US Navy, and US Marine Corps pilots encountered a Soviet jet that was worryingly superior in a number of ways to their own fighters.

After four months of air superiority for the USAF's Fifth Air Force, the gun camera film shot by the pilot of an F-51D in November 1950 showed a swept-wing jet fighter that was virtually unknown to UN forces. Later that month, these fighters, identified as MiG-15s, attacked a B-29 Superfortress formation over a NKPAF airfield and then rapidly outdistanced the bombers' F-80 escorts. Clearly a better fighter was needed to protect US aircraft from these Soviet fighters. AAA had claimed a B-29 as early as July 12, 1950, but it was the first loss to a MiG-15 four months later, on November 10, that triggered the decision to deploy F-86A Sabres to Korea.

Two of the 4th FW's squadrons (with 49 F-86A-5s and 200 personnel) sailed across the Pacific aboard the escort carrier *Cape Esperance* in November 1950. The random-looking parking arrangement of the jets in this photograph illustrates the hasty embarkation, while the variety of tail flashes attests to the collection of 36 of the very newest FY49 models from other fighter wings so that the 4th was equipped with the very latest version of the F-86A. (Tony Holmes Collection)

Fortunately, in December 1950, the 4th FW's three F-86A squadrons,

commanded by Col George F. Smith, were principal components in mainland USA's Air Defense Command (ADC). Gen Hoyt Vandenberg, Chief of Staff of the Air Force, realizing the MiG-15 was a serious threat, responded to the urgent request from Lt Gen George E. Stratemeyer, commanding general of the Far East Air Force (FEAF). He despatched the 4th FW's latest F-86A-5s, borrowed from other wings, and the 27th Fighter Escort Wing with its F-84Es. In combat, pilots flying Thunderjets would claim ten MiGs, but in turn 18 F-84Es were lost to the Soviet fighter.

On November 9, 1950, the 4th FW's 334th and 335th FSs were given 48 hours to prepare for a temporary duty deployment with 49 Sabres and 200 airmen. They flew their fighters from their east coast airfields in Delaware and Virginia to San Diego, California, for shipment aboard the escort carrier USS *Cape Esperance* (CVE-88), while aircraft of the 336th FS were shipped aboard four fast tankers as deck cargo from Oakland, also in California.

Delays in combat use on arrival resulted because, in transit, many F-86As had inadequate protective covering. Control surfaces and magnesium wing trailing edges for some aircraft had to be replaced due to saltwater corrosion and others had damaged nose gear units. Only seven were immediately available upon the 4th FW's arrival in-theater.

During the jets' voyage across the Pacific the military situation in Korea had rapidly worsened, and the 4th FW could not be based at Pyongyang as Gen Earle E. Partridge, commanding general of the Fifth Air Force, had intended. Instead, the wing set up its rear echelon at Johnson AB, in Japan, and deployed to K-14 Kimpo as Det A from December 13 with the seven serviceable jets, mainly with 336th FS pilots under the leadership of high-scoring World War II ace Col John Meyer. Within a fortnight 32 F-86As had been returned to airworthiness, but conditions at K-14 and the winter weather combined to make it very difficult to conduct operations.

Kimpo was then the only base in Korea suitable for Sabres, and although it was in a very poor state, combat operations commenced on the afternoon of December 17. When K-13 Suwon, 30 miles south of Seoul, became available in spring 1951, conditions were similarly austere. 4th FW pilot 2Lt Dick Merian recalled, "We lived in tents and mud and ate some very bad food. It was so bad at times I used to barter with GIs for their C-rations." The threat of foreign

object damage to jet engines was constant.

Col John C. Meyer, 4th FW commander from August 1950 to June 1951, had claimed 24 victories during World War II, and he added two more MiG-15s to his tally in Korea. Meyer led the wing to Johnson AB, Japan, supervised Det A's deployment to Kimpo and led the first combat mission on December 17, 1950. (USAF)

Road to War

US interest in Korea was prompted by Soviet intentions to enter this former Japanese colony after World War II. In 1945, it was decided that the USSR would disarm Japanese troops north of the 38th parallel while US forces would deal with troops in the south of the country. This situation soon hardened into the creation of two fiercely opposed governments. Syngman Rhee was elected to head an anti-communist government in the Republic of Korea and the Democratic People's Republic of Korea retaliated by appointing the Marxist Kim Il-sung as its leader.

US strategic interests at the time were focused on Europe, but also on Taiwan,

with the latter seen as the most likely target for a Chinese communist takeover. In 1950, Chinese aspirations switched to "rendering assistance to the Korean people." Considering South Korea indefensible, and not wanting to get involved in another Far Eastern ground war, the USA withdrew its troops, leaving a small "police" force as token support in the hope that it would deter Syngman Rhee's Republic of Korea from attempting to invade the neighboring Democratic People's Republic of Korea.

After achieving a dominant military position in the world in 1945, the USA had substantially reduced its forces and was unprepared for a new war. By 1950 its military strength had slipped behind the Soviet Union's – a change which greatly interested the Chinese and North Koreans. When MiG-15s appeared among other new types at the USSR's 1948 Tushino air show, the West took little notice. America was focused on the possibility of direct nuclear conflict with the Soviet Union, so Korea was a low priority for the Truman administration. Indeed, in a speech by US Secretary of State Dean Acheson to the National Press Club on January 12, 1950, he forgot to include South Korea among countries that the USA would defend against communist aggression, giving considerable encouragement to North Korea.

By then, worrying developments had already occurred in China, where Soviet Air Task Force personnel under the command of Lt Gen Stepan Krasovsky were training Chinese pilots and AAA and reconnaissance units, emphasizing the defense of bridges and dams north of the Yalu River. Furthermore, commanders of Soviet Air Force units in China had been ordered to prepare trainees for combat operations to defend North Korea and northeast China.

Encouraged by America's apparent lack of interest in Korea, Kim Il-sung persuaded his counterparts in China and the USSR to support an invasion of South Korea, which commenced on June 25, 1950. The Soviet Union armed the KPA and the NKPAF, supplying tanks and 132 piston-engined aircraft. Communist forces then comprised ten infantry divisions and an air division with Il-10 ground attack aircraft and Yak-9P fighters. Kimpo and Seoul airfields were strafed by the NKPAF and a USAF C-54 transport, evacuating US personnel, was destroyed.

US intelligence on North Korea was minimal, which meant that the KPA invasion by 90,000 troops and hundreds of Soviet-supplied T-34 tanks was

unexpected, as was the later, more massive incursion by the PVA in late October 1950. America's priority was to evacuate all local US personnel. It covered the withdrawal at long distance, using 8th Fighter Bomber Group F-80Cs from Itazuke, Japan, while the KPA carried out its invasion. On June 27 President Harry S. Truman, with UN support, told the FEAF to defend South Korea. Great Britain ordered its Far East Fleet to participate, and on June 30, responding to the KPA's seizure of South Korea's capital, Seoul, Truman authorized bombing of North Korea.

This rapid US reaction surprised the communists. UN naval and air forces made the first military moves, followed by Washington-authorized and UN-approved ground troops on June 30. By July 4, the latter were fighting the KPA near Osan, although they were quickly driven back into a small area around Pusan in southeast Korea. By July 7 Gen Douglas MacArthur, newly appointed as Commander-in-Chief of the UN Command, had assembled much larger international forces. Lt Gen Walton Walker, commander of the newly arrived Eighth Army, reassured America that "our lines will hold," albeit at great cost.

MacArthur hastily devised Operation *Chromite* – an ambitious but risky plan for an amphibious assault at Inchon, southwest of Seoul, on September 15, followed by a break-out from the Pusan perimeter against an enemy whose supply lines were overstretched and under constant air attack. This strategy divided the enemy effort and weakened their advance. By September 26, Seoul had been re-taken and communist forces were retreating.

In the Skies Above

Before the arrival of F-86As, the Fifth Air Force's F-80Cs, along with F-82G Twin Mustangs and F-51D Mustangs, had gained air superiority in Korean skies by July 1950. By the 20th of that month 24 NKPAF Il-10s and Yak fighters had been destroyed. On that day Il-10s interrupted the US evacuation, and four were shot down by 35th Fighter-Bomber Squadron (FBS) F-80C pilots – the first kills credited to US jet pilots. Bombing of North Korean airfields had commenced on June 29, when 25 NKPAF aircraft were destroyed on the ground. These losses forced the remaining North Korean air elements (estimated by Soviet observers at 20 Il-10s and one Yak-9P) to retreat to China.

Responding to *Chromite*, Chinese Communist Party Chairman Mao Zedong

became concerned that UN forces could enter China. He ordered his 13th Army Group to defend the Manchurian border along the Yalu River. Meanwhile, MacArthur was determined to eliminate the rest of the KPA and reunite Korea under Syngman Rhee, leaving US troops on China's border.

Soviet pilots from 29th GvIAP first deployed to Xuzhou, in China, from Kubinka, near Moscow, in March 1950. The following month the unit's MiG-15s were sent to Dachang air base (seen here) to bolster the defense of Shanghai as part of 106th IAD. After shooting down several American-supplied Chinese Nationalist aircraft, 29th GvIAP was posted to Dalniy in September and it was committed to action over Korea from December. (Tony Holmes Collection)

On November 8, the FEAF despatched 70 B-29s of the 19th Bomb Group (BG) in an incendiary attack on Sinuiju, near the Chinese border with North Korea. Although no obvious military targets were hit, more than 2,000 civilians perished and half of the city was destroyed. This raid made a great impression upon North Korea's communist allies, and accelerated Joseph Stalin's military assistance to Kim Il-sung. Shortly after the attack, the Leader of the Soviet Union publicly announced, "For Korea we will stop at nothing." The devastation of Sinuiju also provided the necessary propaganda to convince many serving Russians that their participation in the Korean War would have humanitarian motives. Maj Gen Georgiy Lobov, commanding the Soviet 64th Fighter Air Corps (IAK) in North Korea, compared the raid to the Allied attacks on Dresden, in Germany, in February 1945.

The two UN forces that headed north from Pusan and Inchon following the launching of *Chromite* united and crossed the 38th parallel on October 1 and

subsequently took Pyongyang 18 days later. Airfields at K-2 Taegu and K-14 Kimpo duly became available again by October. The Truman administration was concerned that the UN successes could bring the USSR and China directly into the conflict, but MacArthur reassured the President on October 17 that the Chinese would not enter the war. Ten days later the PVA made its first assault, and on November 24 MacArthur's army ran into a massive Chinese force more than 300,000 strong that routed the UN troops by night, quickly driving them out of North Korea in one of the US Army's worst defeats. Seoul was recaptured and the communist "tidal wave" advanced 60 miles south of it.

By September 28, 1950, 31 PLAAF pilots had been trained on MiG-9 and MiG-15 fighters. For Chinese students, the theoretical aspects of flight were challenging due to the language barrier and low educational standards of many recruits, so these sections were shortened. However, within a year of combat, Chinese pilots had earned a reputation among their Soviet instructors for being brave and aggressive, but somewhat impetuous. They progressively took over the air war from the Soviet units. (Tony Holmes Collection

MiGs Appear

In the first phase of direct Soviet involvement in the Korean War, lasting up to April 1951, Stalin supported Kim Il-sung and encouraged him to attack South Korea without provoking a war with the USA. Soviet weapons and advisors were provided, although Stalin declined to send sufficient air support. In fact, his own air force had a severe shortage of jet units.

Following the rapid defeat of the NKPAF, Kim Il-sung appealed to China for support. Mao Zedong agreed to send three armies into Korea, but the Chinese

said they lacked sufficient aircraft to help the North Korean cause. The invasion proceeded anyway, and the USSR was then obliged to commit three Guards Fighter Air Regiments of 151st Guards Fighter Air Division (GvIAD) to action. They initially operated from Antung and Miaogou, before moving to Anshan, Mukden, and Dapu. It was quickly realized that Antung was the only suitable base for MiG-15s, limiting the available numbers in-theater.

A T-6 Texan forward air control aircraft was attacked by six MiG-15s during an F-51D strike on November 1, 1950, this clash being the first time UN aircraft had been engaged by Soviet jet fighters. They were from 72nd GvIAP's 1st squadron, which was commanded by World War II ace Maj N. V. Stroykov. Soviet pilots claimed two Mustangs destroyed.

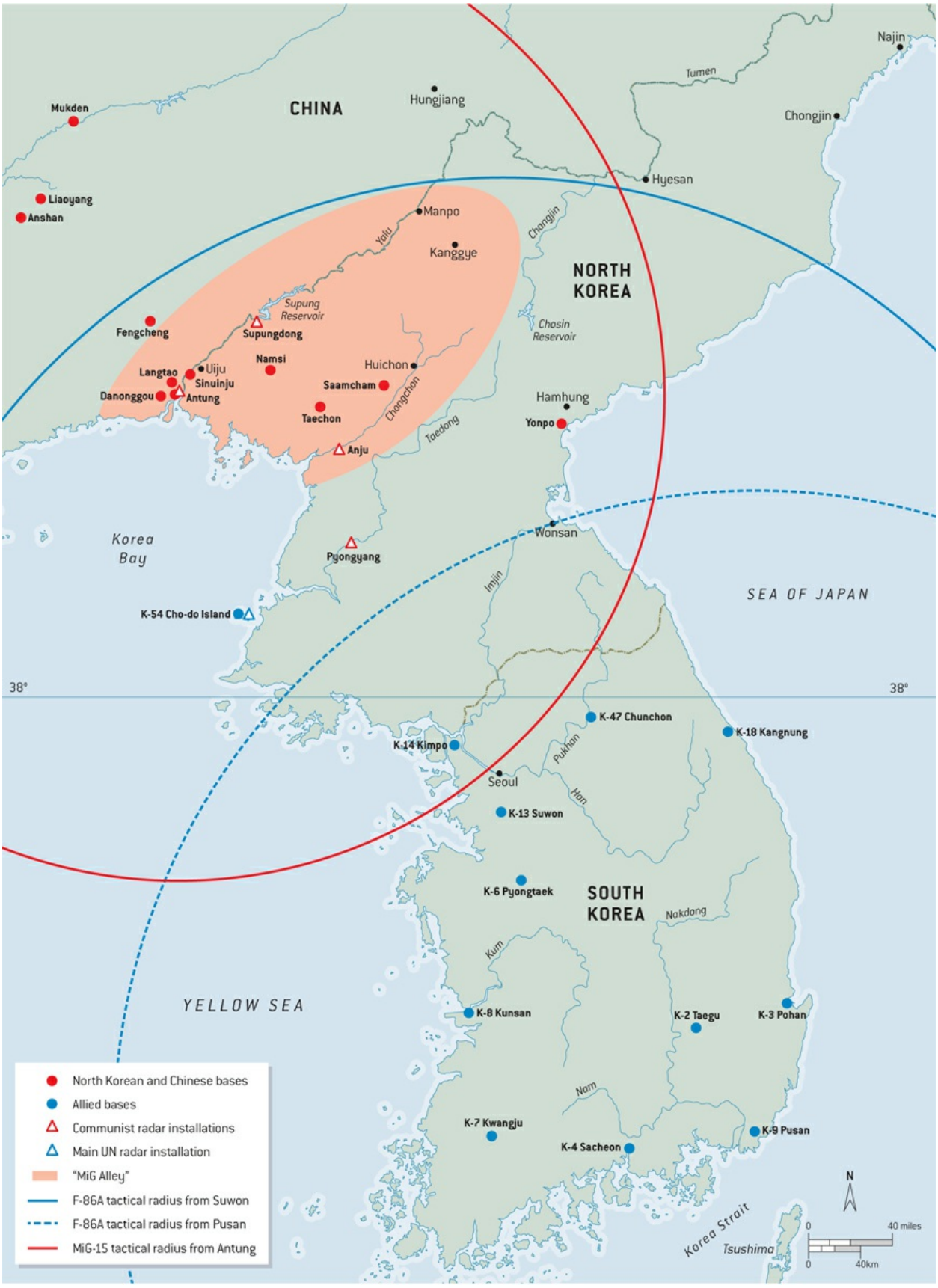
Exactly one week later, F-80Cs from the 51st FW's 16th FS were flying top cover for a strike when they engaged six MiGs from Antung in the first ever jet-versus-jet engagement in the history of aerial warfare. Lt Russell J. Brown, flying F-80C 49-0717 as wingman in a flight of four, dived after one of the Soviet fighters while the other five rapidly headed back to Antung. The heavier weight of his Shooting Star enabled Brown to catch up with the fleeing fighter. Despite having only one operable 0.50-cal. machine gun, he hit the MiG repeatedly, causing a fire. Although Brown was credited with a kill, Soviet sources stated that the MiG pilot, Snr Lt Kharitonov, escaped by diving away. Three more MiGs were claimed by US Navy F9F Panther pilots on November 9 and 18.

Stalin had ordered MiG regiments to operate secretly as "volunteers" and had restricted them to patrolling "MiG Alley" in the northwest corner of North Korea in order to preserve the pilots' identities. On November 15 he allowed the establishment of 64th IAK, commanded by Lt Gen Ivan Belov. One of the units assigned to the Corps was 324th IAD, which was tasked with defending the Yalu area – specifically its cities, communications, and power stations – from US reconnaissance and air strikes. Pilots were forbidden to stray south of the Yalu beyond a line from Pyongyang to Wonsan, or over Korea Bay, so as to avoid possible capture that would inevitably give the UN tangible proof of Soviet involvement in the war.

The second phase of Soviet involvement in the conflict lasted until January 1952, and included the overwhelming Chinese offensive and increased US bombing, with large-scale dogfights between Sabres and MiGs. At the start of

the third phase, Soviet Air Defense Aviation (PVO) combat units relieved second phase divisions. Among them, the inexperienced 97th IAD replaced the veterans of 324th IAD, with consequent heavy losses.

During the conflict, US pilots were forbidden to attack aircraft at their Manchurian bases – a constant source of frustration. At this time, America mainly feared Soviet attacks on NATO countries in Europe, so the risk of provoking direct conflict with China was considered a dangerous diversion. However, unofficial US aerial incursions into China frequently occurred, often with tacit encouragement from senior USAF personnel. After direct Chinese intervention began on October 27, 1950, MacArthur and Stratemayer requested permission for a "hot pursuit" policy extending eight miles into China to chase MiGs fleeing back to Manchuria. Acheson and President Truman supported this, but other UN allies objected, so it was never made official.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Hyesan
Manpo
Kanggye
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Supungdong
Fengcheng
Namsi
Huichon
Langtao
Uiju
Sinuinju
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K-6 Pyongtaek
Nakdong
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K-8 Kunsan
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K-9 Pusan
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Allied bases
Communist radar installations
Main UN radar installation
"MiG Alley"
F-86A tactical radius from Suwon
F-86A tactical radius from Pusan
MiG-15 tactical radius from Antung

F-86A-5 49-1240 flew with all three squadrons assigned to the 4th FW in Korea prior to being passed on to the 190th FS of the Idaho ANG. The aircraft's open ammunition doors served as steps for access to the cockpit. The A-model's brown fiberglass nose ring was often painted in squadron colors. (USAF)

Many reconnaissance missions were flown by RB-45s and RF-86As to monitor Chinese airfields, with some flights enjoying an F-86 escort. Sabres also protected B-29s targeting the Yalu bridges, and although these missions took them close to the Antung airfield complex, MiGs on the ground there were not attacked. Unofficial cross-border Sabre missions had begun by April 1951, and they continued throughout the war. Up to half of the MiGs lost to F-86s fell near their own airfields. Gun camera film of these engagements was officially destroyed.

Soviet-flown MiGs frequently crossed the Yalu to engage UN strike forces. Chinese-flown jets initially avoided Korea, however, as the pilots generally lacked combat experience to deal with the Sabres, as did their NKPAF counterparts. This meant that they were usually only encountered near their airfields bordering the Yalu River, thus easing the UN's preservation of air superiority over the enemy's rear areas in Korea.

China's invasion eventually stalled south of Seoul, forcing the PVA to retreat to the 38th parallel. This allowed the 4th FW to return to Suwon, 24 miles south of Seoul, on March 6, 1951. The following month 324th IAD entered combat from Antung, followed by 303rd IAD in May. B-29s were their principal targets, and Sabres could not completely protect the bombers against

an overwhelming number of interceptors. Superfortress gunners had difficulty in defending themselves as their World War II-vintage fire control system was often too slow to tackle fast-flying MiG interceptions.

The USSR called for armistice talks on July 20, 1951, but another two years of trench warfare continued along the 38th parallel until the Korean War Armistice Agreement was signed by the UN Command, KPA, and PVA on July 27, 1953.

CHAPTER 3

PATH TO COMBAT

The battles over "MiG Alley" brought two fighter forces, which had quite recently been allied against Nazi Germany, into conflict with each other. Soviet pilots regretted this and were unfamiliar with the Americans' tactics, having never fought them before. Soviet ace Lt Col Aleksander P. Smorchov reflected, "We did not view the Americans as enemies, but only as opponents." They accepted the anonymity conferred by Stalin's insistence that they posed as Chinese or North Korean pilots, and realized that their contribution was unrecognized within the USSR. When they returned home, their combat experience was studied, but lessons learned were not passed on to pilots in replacement units. For Sabre pilots, there was no confirmation that they were fighting Russians, although many suspected as much.

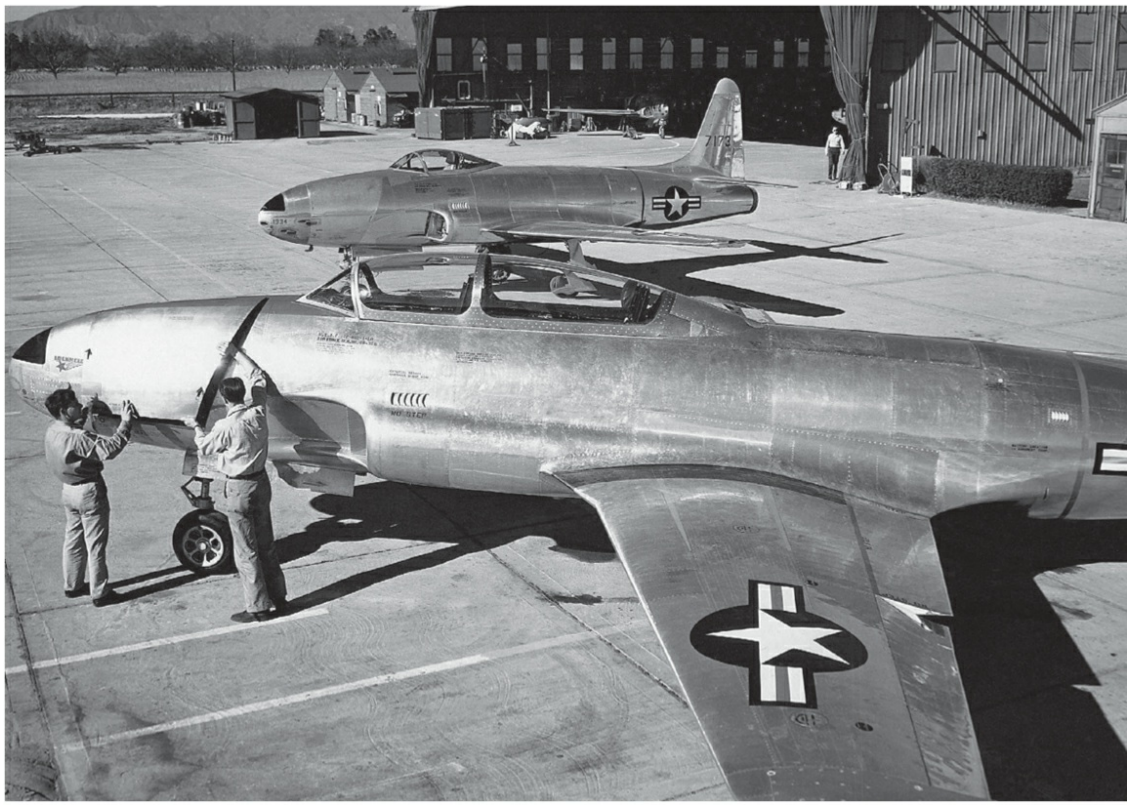
The USAF's Sabre training program was not established until late 1951, with fighter and fighter-bomber programs being run by the 3595th Combat Crew Training Wing (CCTW) at Nellis AFB, Nevada, by 1953. The full course took 265 hours, including about 80 hours on the F-86, with a solo checkout, some aerobatics, engineering knowledge, formation flying, high and medium altitude

air-to-air combat, and air-to-ground gunnery.

Attrition was high as there were no two-seat F-86s, although T-33A Shooting Stars, introduced in June 1949 for advanced training at Williams AFB, Arizona, gave most pilots their first jet rides. For many of the pilots that saw combat with the 4th FW in F-86As in 1950–51, their initial jet flights had come in single-seat F-80s at Nellis from July 1950. One such individual was 1Lt Jim Kasler, who became an ace in Korea with the 4th FW in 1952 despite arriving in-theater with only 40 hours on the Sabre. Early jet training proved to be a risky business, and within a year 22 of Kasler's class of 82 had been killed in accidents.

Engine failure on take-off was fortunately infrequent, but usually un-survivable. Crew chief TSgt Norm Kalow recalled a 1951 tragedy at Suwon as two Sabres took off, side by side:

> About a hundred feet up one Sabre [probably F-86A-5 49-1271, which was lost on August 14, 1951] "staggered" due to an unexplained power loss. The pilot reacted quickly by dropping his external tanks and lowering the nose to maintain airspeed. His luck and his altitude ran out simultaneously as he crashed into an elevated rice paddy embankment. The engine broke loose upon impact, came forward and crushed the pilot.



For many would-be F-86 pilots, both newly winged aviators and World War II veterans alike, their first taste of flying a jet-powered aircraft came at the controls of the T-33A Shooting Star. A two-seat trainer based on the F-80C fighter (an early example of which is seen here in the background), the T-33A entered service with Air Training Command in 1949. (USAF)

Experienced pilots from propeller-driven aircraft were involved in 45 percent of jet mishaps. The 1st FG, the first F-86A wing, suffered 12 major accidents, with two fatalities and five write-offs, during its first year of Sabre operations. Getting used to the slow spool-up times for jets compared with reciprocating engines and the danger of flameouts by making too rapid throttle movements caused many mishaps.

Normally, the training program included ten mock combat sorties, but to supply the wartime squadrons' needs, courses had to be slimmed down. Inadequate training was blamed for high jet accident rates, but it was still generally lower than the attrition suffered by communist pilots learning to fly the MiG-15.

2Lt (later Brig Gen) Alonzo J. "Lon" Walter was in the first 335th FS detachment sent to Suwon in March 1951. He noted that many lead pilots were experienced veterans, but "virtually every wingman, such as myself, was fresh out of flying school. I had 75 hours flying the F-86, which was the first jet I flew, but I never fired the guns until my first combat mission. We had faith and discipline, however, and the 'old heads' were great teachers. They were the 'shooters' while we were the 'lookers' who watched their tails in combat."

Brig Gen Michael E. DeArmond, who was a wingman 2nd Lieutenant with the 335th FS from December 1951, recalled that a posting to the 4th FW was seen as "a highly coveted assignment, sought by many high-ranking and experienced fighter pilots." He considered that was why so many newer pilots remained as wingmen throughout their Korean tours. To him, "the wingman should spend most of his time looking, while still holding position on a rapidly maneuvering lead. This requires skills, including the ability to hold formation while near stall speeds at 44,000ft, 'split-S-ing' for an attack, and hanging in on square loops and rapid rolls while still 'clearing six' [checking for threats from behind] for the lead."

Flying as a wingman had numerous disadvantages, as DeArmond recalled:

> The wingman is more open to attack than is the flight lead for three reasons. First, he is usually trailing his lead by several hundred yards, purposely, to allow maneuvering room for the lead. As such,

the wingman is the closest aircraft to an enemy attacking from the "six o'clock" position, so he's normally the first aircraft to be fired on. The second problem is clearance provided by the lead, particularly during a dogfight. If attacking, the lead is normally fixated on the enemy aircraft he is attacking and, unless he is really good, he is not clearing for his wingman. Often a wingman's first indication that his flight is under attack is when a burst of enemy fire goes past his canopy.

The third reason is flight lead competence. There are good leads and bad leads, and bad leads lose more wingmen than good leads do. For example, the day I was shot down [by a MiG-15 in F-86E 51-2787 on April 21, 1952], I was the fourth wingman lost by my lead. On occasion a wingman will be assigned to a "MiG-hungry" lead who has little regard for a wingman, or who will use his wingman as bait if things are slow. In this case the lead would direct his wingman to hold altitude while he climbed high and positioned himself behind his wingman, hoping a MiG would initiate an attack on the solo wingman and he, in turn, could attack the attacker. Wingmen are fighter pilots who, in combat, want to shoot, but they seldom get the chance until their lead runs out of ammunition. A fat target is a terrible temptation.

More than a quarter of 4th FW pilots in Korea were World War II fighter veterans, and 11 of the 38 F-86 aces had also "scored" during the earlier conflict. There were also a number of post-war graduates following the resumption of pilot training in October 1946. Until June 1950, more than 60 percent of USAF fighter pilots had qualified before 1946. For Korea, many were recalled from non-flying posts, or as reservists with World War II experience.

The 4th FW's main advantage in the first months of combat was that it had better trained pilots than most of the Soviet MiG-15 units in-theater. Although aviators from both sides had been trained to undertake the home defense air superiority role, Sabre pilots saw themselves as being more aggressive in combat. They were also convinced that their claimed seven-to-one kill ratio in December 1950 showed that the MiG-15 enjoyed no real performance advantage over the F-86A. However, the 4th TFW was at a significant tactical disadvantage.

4th FW pilots sent into combat in F-86As in 1950–51 had received little in the way of conversion training onto the Sabre prior to deploying to the Far East. Indeed, the 3595th CCTW at Nellis AFB did not commence tuition on the jet until late 1951. Here, an F-86E from the wing leads three A-model Sabres in close formation during a training flight over Nevada during 1952. (USAF)

F-86A-5s from the 336th FS are refueled at Suwon between missions in the early spring of 1951. The aircraft closest to the camera is 49-1225, which survived the war and later flew with the 191st FBS of the Utah ANG. Behind it, 49-1307 was less fortunate. On June 18, 1951 Capt William D. Crone collided with the MiG-15 flown by future ace Capt Serafim Subbotin, who successfully ejected. Crone, however, was unable to escape from the wreckage of 49-1307 before it crashed. (USAF)

Operating close to their bases, MiG pilots could choose their times to engage or run for home, while Sabre pilots often had to fly home "on jet fumes," landing with empty tanks or even having to eject when their fuel was exhausted. In-flight refueling was still at the experimental stage, and the F-86's modest fuel reserves meant that fuel management was a top priority for pilots.

1Lt Douglas Evans had accrued roughly 40 F-86A hours with the 335th FS before he had the experience of firing the jet's guns, and he was amazed by the noise the weapons' generated and the smoke they emitted. Five-victory ace 1Lt (later Capt) Richard Becker was heavily involved in the 4th FW's early MiG battles. His jet experience began after graduation in February 1949:

> I was assigned to the 334th FS at Andrews AFB, Maryland, where I flew the F-80. After 150–200 hours on the F-80, I went to Langley AFB, Virginia, with the 4th FW in the summer of 1949. We received F-86As shortly after I arrived – I flew to the factory in Los Angeles and picked up three. George Welch [North American Aviation (NAA) test pilot] checked me out in the Sabre. I read the pilot's handbook, got in the airplane, made one familiarization flight locally, and then flew to Langley Field. Another pilot and I came back together. He had not checked out in the Sabre either. We both took one local flight and flew back to Langley in formation. We did not have drop tanks; we skipped across the country, with each leg covering 450 miles.

2Lt Dick Merian's preparation for action was equally straightforward:

> I wanted some excitement before settling down to a civilian career and I was tired of school, so I

> decided to join the Air Force and fly jet fighters. I graduated from flight school at Williams AFB two days before the Korean War started. Originally slated for Japan, my orders were changed to the 4th FW at Langley. With my 35 hours of jet experience in T-33s and F-80s, I became part of the 335th FS in July 1950. Now it was up to our flight commanders to make fighter pilots out of us. The 4th FW was an interesting mixture of pilots with World War II combat experience (including a number of aces) and youngsters like myself who were as green as green apples and knew nothing of fighter pilotage.

Exchange pilots in Sabre squadrons came from the US Marine Corps, with 11 seeing service in Korea. World War II US Marine Corps ace Maj John F. Bolt became an F-86 ace with the 51st FW in 1953. Exchange pilots tended to fly shorter tours than their USAF counterparts. Royal Canadian Air Force (RCAF) and Royal Air Force (RAF) pilots were also involved in the exchange program, with Sqn Ldr (later Air Vice Marshal) William "Paddy" Harbison flying with the 335th FS from Kimpo. He recalled that pilots serving with the unit flew "the F-86 to its limits, and much closer to the edge of the envelope than I had experienced."

Some pilots in the early assignments to South Korea had experienced crude conditions at European bases during the post-Operation *Overlord* period some six years earlier, while others knew only the comparatively luxurious Stateside or Japanese bases. Upon arriving at Korean airfields like Kimpo, they found primitive facilities and a climate that varied between icy winters and steamy summers, with the latter being so humid that leather flying jackets went mouldy. Frequent bad weather interfered with flight schedules and flooded airfields. Pilots made up for this with uproarious O-Club parties, with the RAAF's Meteor F 8-equipped No 77 Sqn excelling in that area.

In February weather woollen sweaters, shirts, and flightsuits would be added to "long johns," a G-suit, a leather flying jacket, and two pairs of socks, all of which impeded movement in the cockpit. To get to their aircraft, pilots wore galoshes over leather US Navy-pattern flying boots, with warm Russian-style hats. They found the early white helmets heavy and poorly fitting, but they offered better protection than Soviet leather headgear. Their oxygen masks were likely to cause painful chafing. Leather gloves were standard until fireproof Nomex ones were available.

By the autumn of 1951, most of the very experienced 4th FW pilots had completed their 100 missions and been replaced by newly qualified aviators.

Some of the latter had only multi-engined operational experience prior to completing a fairly quick conversion course onto the F-86. Combined with the low availability rates for Sabres, this slowed their acquisition of combat experience by limiting their flying to around ten sorties per month. USAF philosophy was that any pilot could theoretically be trained to fly any of its aircraft, although the "fighter pilot mentality" was not so easily acquired by those with very different experience.

Framed by the intake of an engineless Sabre, technicians replace a J47-GE-13 on a jet from the 4th FW at Kimpo in September 1951. Swapping out a faulty engine, which had perhaps been the victim of a "hot start" or FOD, was one of the maintainers' most complex tasks. As with the MiG-15, the Sabre's whole rear section was detachable for full engine access. (USAF)

Sabre Sharpeners

When it entered combat, the F-86 and its maintenance demands were still new to USAF wings. In Korea, availability at first averaged a 59 percent in-commission rate, with a shortage of spares being a major problem. However, in the opinion of 4th FW maintainer TSgt Norm Kalow:

> The Sabre was a great aircraft. Most repairs were easy compared to reciprocating engine aircraft, except for a few items such as canopy seals [seal replacement was a difficult and messy job involving adhesive,

> inflatable rubber tubes, and much air-testing]. We experienced minimal servicing problems at the primitive airfields and facilities in Korea. As an example, two of us could change an engine and complete its post-fit run-up in under an hour with few tools. All a good crew chief needed was a screwdriver and a pair of water pump pliers and we could fix 90 percent of the problems.

From December 13, 1950, when the F-86 commenced Korean operations, there was a shortage of groundcrew at Kimpo and crew chiefs had no assistants. Tools and spares were hard to come by, and the bureaucratic request process slowed down all supplies. Fortunately, most jobs could be accomplished by the crew chief. Engine problems included ruptured rubber membranes in the fuel flow control valve and "hot starts" that caused a long flame to fire out of the jet pipe, damaging the powerplant. Some sheet metalwork was done at the Korean bases, and the Sabre's strong airframe meant that "gear up" belly landing damage could usually be repaired.

John Henderson was the first NAA F-86A technical representative to go to Korea with the 4th FW. One of his early challenges was dealing with corrosion that had penetrated the grease and tape covering the F-86As on board *Cape Esperance* during the sea voyage to Japan:

> The severity of the corrosion depended on how far forward each airplane had been on the carrier's deck. Most of the damage was due to electrolytic reaction between the magnesium filler strips attached to the ailerons' trailing edge aluminum.
>
> Once in-theater, I accompanied the first F-86A detachment to Kimpo and saw the weapon system operate in the worst weather, under the most primitive and restrictive of maintenance conditions, and with probably the strongest demand for a 100 percent in-commission rate from the higher commands. The engine jet pipe temperatures were trimmed up to exceed the rated thrust (which decreased the engine hot section components' life expectancy), the airframes were flown past their red line restrictions and G-forces often exceeded the 7.33g limit for which their structure had been designed. Although these conditions took their toll, none of the jets suffered any catastrophic engine or airframe failures.

In 1951 the 4th FW observed squadron-level maintenance, which meant pilots only flew aircraft from their own unit. Maintenance and availability rates varied. Sometimes, the 335th FS had only six jets ready, compared with up to 16 for the other two squadrons (334th and 336th FSs) in the Wing. For the 335th pilots, this meant they took longer to reach their 100-mission mark. As a result, Col Harrison R. Thyng, who took command of the 4th FW on November 1, 1951, organized a fleet of trucks so that crew chiefs could travel around Korea

seeking parts.

Severe spares shortages in 1951 often caused the cannibalization of Sabres with minor defects. F-86A-5 49-1319 (rear) was lost during a massive aerial battle on October 6, 1951. Hit near its cockpit by a 37mm cannon shell fired by high-scoring ace Lt Col Evgeniy Pepelyaev, the jet was ditched on the shoreline near Anju by its pilot, Capt Bill Garrett, who then abandoned the aircraft and paddled out to sea in his dinghy. Twelve 176th GvIAP MiGs subsequently failed to shoot down the attendant rescue helicopters who recovered Garrett, although they did damage the escorting F-86E flown by 1Lt Arthur O'Connor. (Terry Panopalis Collection)

The arrival of carefully waterproofed F-86Es by sea for the 51st FW in November 1951 further overtaxed the Korean Sabre maintenance set-up. Indeed, by January 1952, 45 percent of all F-86s were grounded, 16.6 percent of them due to parts shortages and 25.9 percent due to maintenance problems. By May of that year the 4th FW was having trouble sustaining 50 percent availability, mainly due to spares shortages. Gen Hoyt Vandenberg eventually resolved the parts crisis through the implementation of programs such as Peter Rabbit within Air Materiel Command, which saw an increase in the stockpiling of spares. This in turn eased problems in the frontline by the early summer of 1952. Fortunately, this crisis had coincided with the communist MiG-15 force adopting a low-key approach to combat.

MiG Masters

Soviet pilots, experiencing similar hardships to their Sabre opponents, missed a Nellis-type combat preparation course, although many had considerable World War II battle experience. Newer pilots had to master dogfighting in action over Korea. Much of their training in the USSR had concentrated on all-weather and night flying. Like the first batches of F-86A pilots, they had been trained in defending cities from large, high-flying nuclear bombers rather than dogfighting.

They lacked detailed debriefing after missions to study faults and problems, while overbearing secrecy meant they were not even told whether their kills had been confirmed. Pilots were forbidden to take photographs or notes, and they had little idea of the numbers of aircraft they shot down. Hero of the Soviet Union awards were handed to far fewer pilots than during World War II.

At Antung air base, MiG pilots waiting the call to scramble to intercept incoming UN air attacks had to sit alert in their cockpits in hot, humid conditions just as their Sabre counterparts did. Alerts in sub-zero temperatures during winter, when aviators wore only light leather jackets, were worse.

In the MiG-15, G-suits could not be used until the PPK-1 system was installed after the Korean War had ended, so pilots tended to black out in a 6g turn. Their G-suited counterparts flying Sabres might only lose vision for up to five seconds, and easing off on the stick quickly restored their sight. A pursuing MiG pilot would by then have had to relax his turn, allowing his foe in a Sabre to commence a roll while the Soviet jet pulled out in front of him and quickly became a target. To resist G-forces and try to take advantage of their aircraft's superior turning circle in comparison to that of the Sabre, MiG pilots had to lean forward in the cockpit, squeezing blood from their lower abdomen to prevent losing consciousness. This constant stress could induce heart problems.

Ejection from the MiG-15, if needed, was initiated with only one handle on the right of the seat, whereas the Sabre had one on either side. A MiG pilot then had to separate from his seat manually. His survival gear was minimal compared with a Sabre pilot's, consisting (according to Maj Gen Georgiy Lobov) of a pistol, a few bars of chocolate, and a can of condensed milk.

For Soviet units like 303rd and 324th IADs, which brought MiGs to Antung airfield in mid-1951, whole divisions were rotated through Korean bases intact, rather than individual pilots joining deployed units as was the case with the USAF. This brought a risk of over-standardized tactics, whereas pilots entering a USAF fighter squadron from different backgrounds could bring new ideas. Sabre pilots quickly learned local tactics by flying as No. 4 in a flight, with an experienced leader (often the squadron commander) protecting and instructing them. Incoming Soviet units had to gain local experience en masse, slowing their combat readiness.

In March 1950, 29th GvIAP pilots from Kubinka air base, near Moscow,

were sent to China, not knowing that they would soon be involved in combat. Once in-theater, they served with 106th IAD (which became 50th IAD prior to seeing action over Korea) defending Shanghai and then trained Chinese pilots from July 1950, entering combat in December 1950.

Mao Zedong also asked Josef Stalin to provide air cover for his armies within a 1950 Mutual Assistance treaty with Moscow. Stalin offered 124 MiG-15s and sent 151st GvIAD from the Moscow area to Mukden, in China, in August 1950 to train the fighter division of the Chinese People's Liberation Army Air Force (PLAAF). Its pilots, identified as "Chinese volunteers," also covered the PVA's 13th Army Group, but could not fly into North Korea and inflame conflict with the USA. 151st GvIAD was not, in any case, combat capable or ready to test its MiG-15bis against better-trained US pilots.

Capt Richard S. Becker of the 334th FS re-enacts his fifth MiG kill. As the second Sabre ace, he claimed five MiG-15s between April 22 and September 9, 1951. Capt Ralph "Hoot" Gibson of the 335th FS became the 4th FW's third ace on the same day Becker claimed his fifth victory. (USAF)

Maj Gen Ivan Belov's 64th IAK was formed at Mukden on November 27, 1950 to oversee Soviet squadrons deployed to the area, and it duly prepared these units to be sent to Antung for combat operation. Its three fighter divisions (28th, 50th, and 151st) comprised five aviation regiments with MiG-15s. By then, 151st GvIAD had seen action from Antung for almost a month, with its newly delivered MiG-15bis engaging USAF F-51Ds for the first time on November 1. The division would suffer notable losses to the 4th FW prior to it ending a highly eventful tour on April 2, 1951.

Although a number of jet-capable concrete runways had been hastily built in China prior to the outbreak of fighting in Korea, MiG-15 operations over "MiG Alley" were flown exclusively from Antung, which had been constructed in just four weeks by 10,000 Chinese laborers. Airfields south of the Yalu River within North Korea itself were too vulnerable to UN air attack.

Stalin wanted the PLAAF to take over its own defense within a year, effectively creating a modern air force, so the Soviet-provided courses were shortened to six months in duration, followed by a six-month conversion course. This was clearly inadequate to provide pilots with the skills to face Sabres, although some Soviet pilots, including five-victory ace Capt Boris Abakumov of 196th IAP, spoke of completing their own MiG-15 conversion courses within 20 days. Trainee maintenance technicians were fortunate that the MiG-15 was a relatively simple aircraft.

The training program had produced 93 pilots and 357 technicians for MiG-15bis units by December 1950. Russian instructors felt that some NKPAF pilots were reluctant to receive instruction or face the Americans, making deliberate blunders to delay their qualification. They thought the poor health of many students delayed training as the men quickly became exhausted. Soviet pilots like Lt Col Evgeniy Pepelyaev regarded Chinese students at Antung in mid-1951 as "cannon fodder," noticing how malnourished and unconfident they were after six months' tuition.

Courses included very little on combat or formation tactics and only 20 hours of jet flight time. Non-operational losses among inexperienced PLAAF pilots were high, with 100 fatal accidents from January to June 1951. A few veteran pilots resisted advice and discarded checklists, wrongly assuming that their piston-engine experience would enable them to fly jets.

64th IAK would eventually include nine IADs at various stages in the war. One was the elite 303rd IAD, which included veteran World War II aces like Capt Stepan Bakhaev within its ranks. The division's three regiments of MiGs had red noses and tailfins, and it suffered its first MiG loss to F-86As on June 1, 1951.

As previously noted, the UN bombing attacks on North Korean cities during the fall of 1950 inspired many Soviet pilots to fight in the defense of socialism. In October of that year, personnel from 176th GvIAP at Kubinka were briefed

on these raids by USAF B-29s, after which volunteers were requested to serve in the defense of North Korea. 303rd IAD pilots Capts Sergey Kramarenko and Grigoriy Okhay noted that everyone raised their hands. Thirty-two were sent to join colleagues at Dongfeng, where they were given Chinese uniforms and documents and told to use Korean radio transmissions in flight. The MiGs they subsequently flew wore NKPAF markings and pilots used kneeboards onto which commands had been written in Russian, along with their Korean language equivalents for reference. In the heat of combat, however, Russian was used and recorded by US intelligence.

Sabre pilots suspected that their opponents were mostly from Soviet units, concluding that the better pilots were unlikely to be Chinese or North Korean as they lacked jet fighter skills. They recognized that the better pilots exhibited expertise and confidence, and they were also informed that successful MiG pilots received a 1,500 roubles bonus for every US aircraft shot down. This was actually an incentive to over-claim, particularly as MiG-15 S-13 gun camera imagery was poor and it was not aligned with the gunsight. Activated by the firing button, the camera had usually switched off by the time the shells were reaching their targets, so kill confirmation via film was usually impossible, prompting over-optimistic interpretation.

Col Ivan N. Kozhedub, who was the leading Soviet ace of World War II, led 324th IAD to Dongfang air base in China on December 25, 1950. Having spent more than three months training PLAAF pilots to fly the MiG-15, he and his unit were redeployed to Antung on April 3, 1951 in order to engage UN aircraft and train KPAF pilots. (Public Domain)

By mid-1951 Antung and Miaogou (which was in northwestern China) were the only airfields used by Soviet units, and they were seriously overcrowded as a result. When large formations were launched to meet UN attacks, collisions on landing post-mission were likely.

Amongst the units in China by the summer of 1951 was 324th IAD with red-nosed MiG-15s, which had deployed from Mukden to Antung in the spring of 1951. Led by ranking Soviet World War II ace Col Ivan Kozhedub, 324th IAD included Pepelyaev's battle-trained 196th IAP and 176th GvIAP. 196th IAP was tasked with training NKPAF pilots on the MiG-15 for 12 hours a day. Overall, 324th IAD contained more experienced jet pilots than had been the case with 151st GvIAD when it had made the first MiG-15 deployment in the fall of 1950. Some had in fact previously served as test pilots for the aircraft until they were "asked" to volunteer for the Korean campaign on the pretext that anyone who chose not to serve was a coward.

The unit's MiGs (initially eight per squadron) were disassembled and sent to China by train. 324th IAD commenced combat operations from Antung on April 3, 1951, when the division lost a MiG-15 and its pilot to F-86s. A further two battle-damaged MiGs managed to limp back to Antung, where they had to be written off.

Both 303rd and 324th IADs had returned to the USSR by February 20, 1952, their place being taken by 97th IAD led by Col Aleksander Shevtsov. The new unit was manned by pilots lacking in any combat experience, so battle-hardened aviators from 324th IAD did their best to train up personnel in the brief time both divisions were at Antung. Maintenance crews from the 324th remained in-theater, being transferred to 97th IAD. The most experienced Soviet pilots were therefore out of the fight after around a year, having defeated the B-29 attacks and claimed 35 Sabres in combat.

CHAPTER 4

WEAPON OF WAR

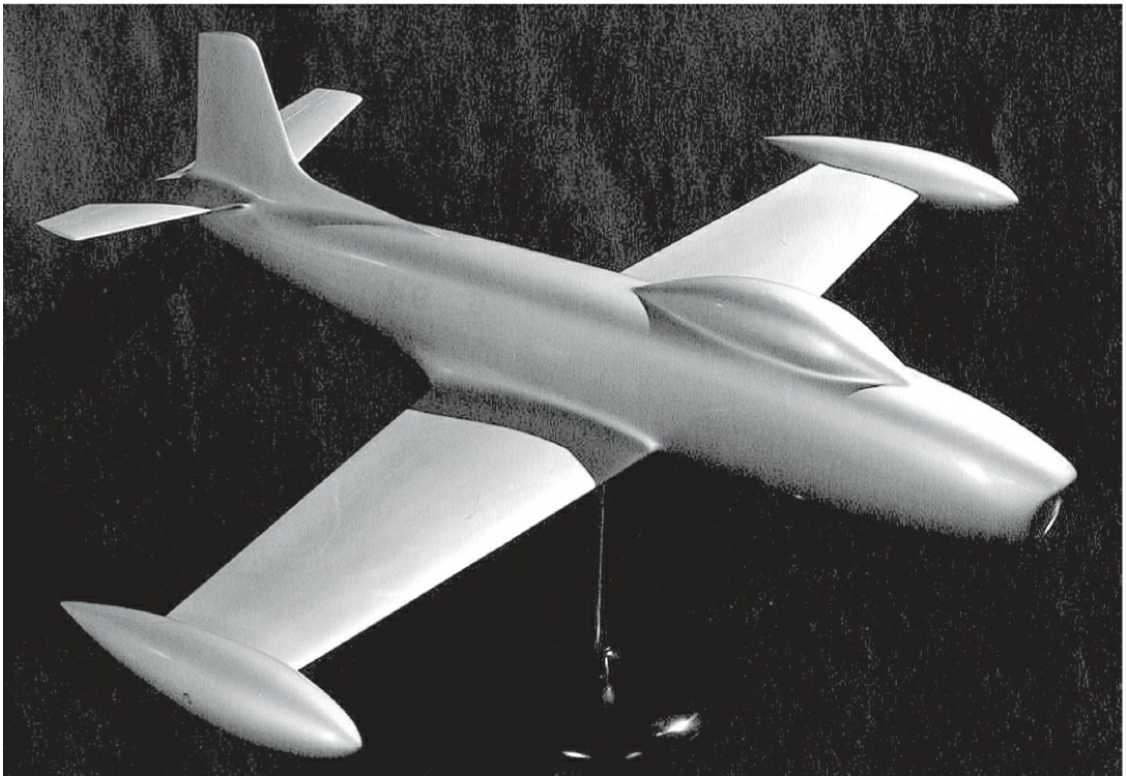
"I had total confidence in the F-86. It took anything the pilot could handle. We could not tear it apart no matter how we flew it, unless we hit the ground!" 4th FW ace Capt Richard Becker's faith in the Sabre was typical. Generally considered the best fighter of its time, the aircraft had superior performance to the F-80C and F-84E. For five years it was the only Western fighter capable of matching the MiG-15. Pilots generally found it reliable with excellent handling characteristics, but unforgiving when flown imprecisely. Both the MiG-15 and F-86 Sabre first flew within three months of each other in late 1947 after fairly brief development periods.

The reciprocating engine was nearing the end of its development potential and the turbojet offered much increased performance, although America was slower than Germany and Britain in accepting jet turbines. In April 1941 Chief of the US Army Air Corps, Maj Gen Henry H. "Hap" Arnold, visited Britain and negotiated license manufacture by General Electric (GE) of Whittle jet engines. These powered America's first jet aircraft, the Bell XP-59A, after which GE began building British de Havilland/Halford Goblin engines that were used

in the first successful USAAF jet fighter, the Lockheed P-80 Shooting Star, which made its maiden flight on January 8, 1944. However, the operational success of Germany's Messerschmitt Me 262 in 1944–45 showed that the performance of jet fighters increased appreciably with swept wings.

F-86 Sabre evolution began with a mid-1944 USAAF requirement for a single-seat, medium range, high-altitude day fighter with secondary escort and ground attack capability. In October 1944, Ray Rice and Edgar Schmued at NAA began design studies. The USAAF awarded a contract on May 18, 1945 for three NA-140 (XP-86) prototypes based on NAA's naval FJ-1 Fury. A mock-up, approved in June 1945, used straight wings and a 4,000lbs thrust J35 jet engine. Its estimated top speed was 582mph (the USAAF required 600mph), but its overall performance was not significantly better than that of the XP-80 Shooting Star.

German wing-sweep data, applied to wind tunnel test models by Project aerodynamicist L. P. Greene, indicated that a 35 degrees sweep would raise the aircraft's limiting Mach number to 0.875. Designer Harrison Storms persuaded senior NAA managers to authorize swept wings for the XP-86, already under construction. September 1945 tests also favored leading-edge slats that extended automatically under high G-forces, effectively increasing wing area and adding lift for tighter turns. A 35-degree swept tailplane with ten degrees of dihedral was included.



An NAA model of the NA-140 design proposal, circa 1945. This was an adaptation of the company's NA-134 proposal, which was submitted to the US Navy and developed into the FJ-1 Fury. (Tony Holmes Collection)

The USAAF accepted the revised XP-86 on November 1, 1945 and the first example (45-59597) was flown by George "Wheaties" Welch on October 1, 1947. Much of his 50-minute flight was spent trying to lock down the nose landing gear. A more powerful J47-GE-1 turbojet replaced the J35-C-3 in the second XP-86A (47-605, which was re-designated XF-86A in 1948), and the aircraft also boasted additional fuel. It was the first service-capable jet fighter to routinely fly supersonically, which was achieved by diving vertically in full power from 40,000ft – some buffeting and slight left wing-drop was experienced at Mach 0.96. The first USAF F-86As were delivered to Strategic Air Command's 1st FG at March AFB, California. On April 16, 1949, the unit became the 1st FW of Continental Air Command.

Engine failure subsequently caused 15 percent of all F-86 accidents. "Cool" starts required sensitive throttle control to prevent the engine either catching fire or stalling. The F-86A's back-up emergency fuel regulator, kept on "standby" after take-off, could also overcompensate and cause flameouts if it was

inadvertently left on. After several accidents the emergency fuel regulator was removed. In December 1951 some 4th FW F-86A engines were adjusted to reach a "redline" jet pipe temperature of 96 percent, increasing the aircraft's top speed. "Rats" (three metal constrictor plates) inserted in the jet pipe to reduce its nozzle area facilitated these higher maximum temperatures. Fuel consumption was around 1,200lbs per hour.

The F-86 inherited the standard USAF fighter armament of six Colt-Browning AN/M-3 0.50-cal. machine guns. Due to the weapons' lower weight of fire and only half the range of the MiG-15's 23mm and 37mm cannon armament, Sabre pilots usually had to close in on the tail of their opponent in order to score sufficient hits to ensure a victory. Some considered the Colt-Brownings better anti-fighter weapons than the MiG's triple cannon armament because of their higher rate of fire, but others, in the opinion of 335th FS pilot Brig Gen DeArmond, were "frustrated to score hits on a MiG, only to watch it climb away." Many MiGs returned to base with more than 50 bullet holes. Sabre pilots usually reported having to score numerous hits to cripple a MiG. The answer for many, including Capt Dick Becker, was firing from close range:

> I remember one MiG I shot down when I was within 300ft with all six guns firing down his jet pipe, and in a short time he blew up. It did not take a long burst. If we fired from 1,500ft with a deflection shot, we had a problem.

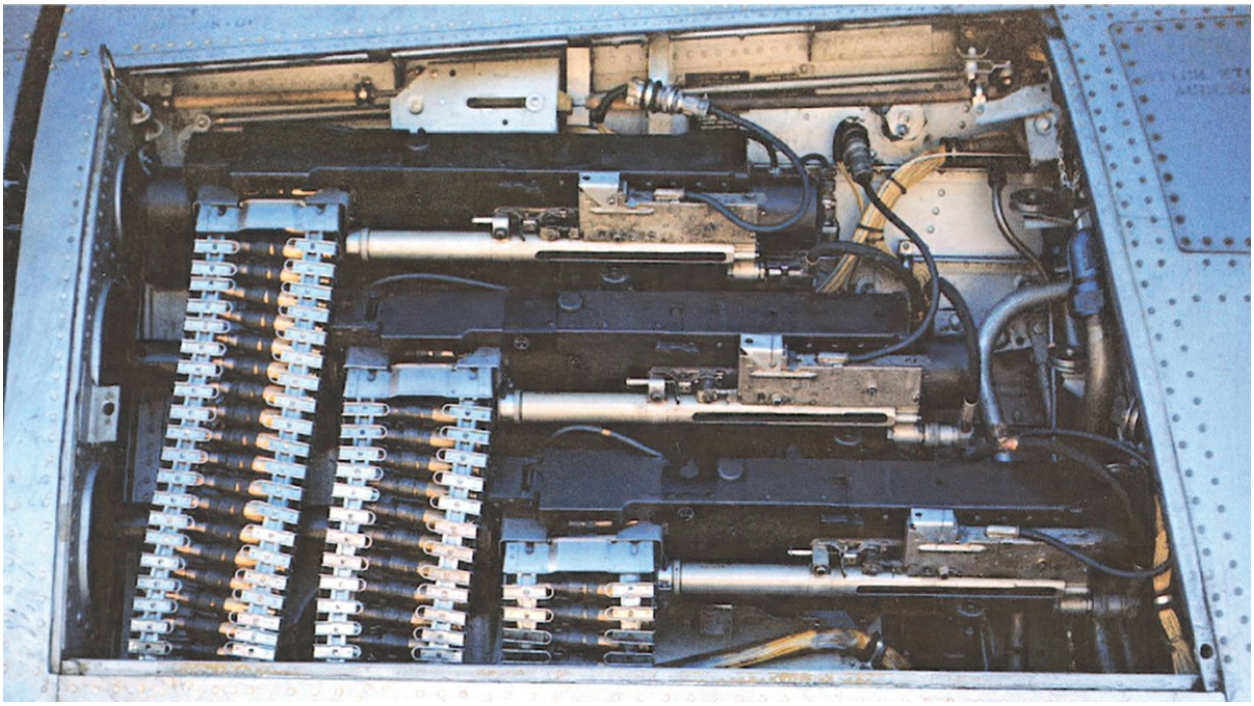
All three prototype XP-86s fly in close formation for the benefit of a USAF photographer in 1949. The jets were eventually destroyed during the course of weapons trials, with 45-59597 and 45-59599 being expended in bomb detonations at the Nevada Nuclear Test Site in the early 1950s. 45-59598 was used as a target at the US Army's Aberdeen Proving Ground in Maryland in 1953. (NARA)

Jets proved to be stronger than many World War II fighters, with simpler engines, no vulnerable propeller, and often no fuel in their wings. Furthermore, jet fuel was less flammable than gasoline in a thin atmosphere. Their 0.50-cal. machine gun armament was reliable and stoppages were rare. Gun heaters, essential at high altitude, worked well, and pilots had to push in a hard-to-reach circuit breaker to arm the weapons. The circuit breaker was pulled by maintainers before flight as a ground safety measure, but forgetting to reset it meant no guns.

The gun camera operated when the trigger on the control column was pressed to its first detent, and the second detent triggered the guns too. Pilots considered the cameras unreliable, producing unclear imagery. 335th FS ace Capt Ralph Parr was among the few pilots to have all their kills confirmed by camera – ten in his case. At extreme deflection the target was outside the camera's view even if it was being hit. Some fired close to parachuting enemy pilots to record the MiG's demise, risking accusation of firing at them.

RAF tests identified armament as the F-86's main shortcoming, and a USAF

Operations Analysis Office report, based on Korean experience from March to June 1951, agreed. "The F-86 pilots universally would like a heavier caliber gun so that when a hit is made, a sure kill results." In March 1951, the FEAF requested trials with 20mm guns as used in US Navy fighters, and from June of that year the USAF Headquarters advocated rearmament with cannon of this caliber. In Operation *Gunval*, F-86s fired more than 70,000 rounds of 20mm ammunition in USAF Armament Laboratory tests. Ten F-86E/Fs were fitted with four T-160 20mm cannon and combat tested in Korea during 1953, but this armament was not standardized until the H-model Sabre entered service post-war.

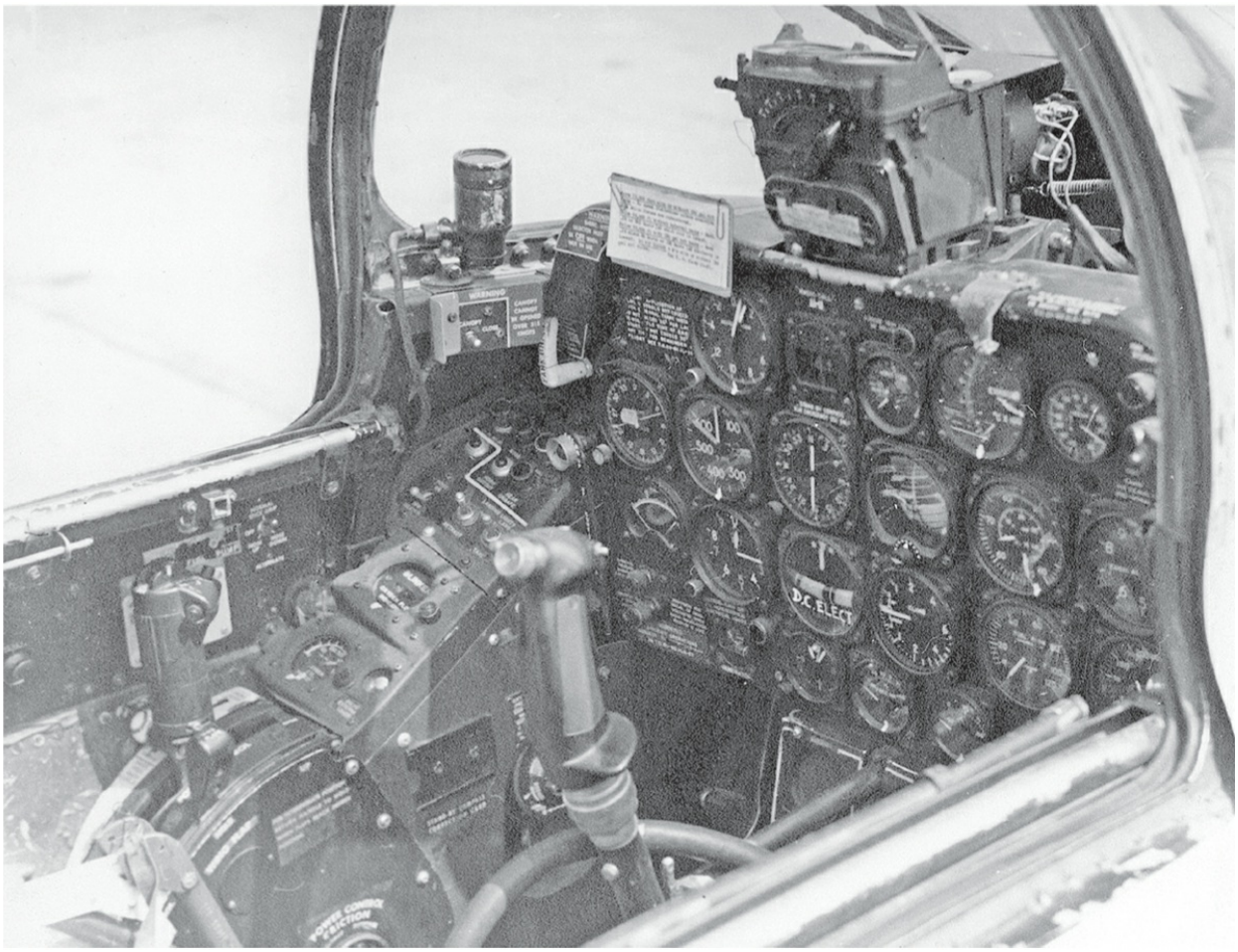


The Sabre's six Colt-Browning AN/M-3 0.50-cal. machine guns were fairly easy to load and remove. The ammunition canisters for each gun contained 300 rounds, although the best pilots usually only had them loaded with 267 rounds because if completely filled, the topmost "row of bullets" could jam against the top of the can on the very first squeeze of the trigger. Recoil, particularly at lower speed, would slow the aircraft down by 3.5mph. In all, 25 million rounds were fired during the war, although not all in combat. (USAF)

LT. COL. G.T. EAGLESTON

F-86A-5 ARMAMENT

The six Colt-Browning AN/M-3 0.50-cal. machine guns fired at a rate of 1,200 rounds per minute – each weapon's ammunition canister contained 300 M-8 rounds. The high combined rate of fire of 100 rounds per second allowed for one gun to jam, although in maneuvers exceeding 7.5g all would stop. Guns were synchronized to a point 1,000ft ahead of the aircraft. Linked ammunition – armor piercing incendiary, which generated "sparkle" flashes when they hit target aircraft, high explosive, and tracer – was fed from individual canisters. The belts of bullets were driven by booster motors that operated cogwheels whose teeth engaged with the ammunition belts in their flexible feed chutes. The guns had to be charged before take-off, and stoppages could only be cleared manually on the ground. Type AN-J4 electric gun heaters prevented icing, and the ammunition compartment was heated by engine compressor air when the pilot operated the gun heater switch.



The F-86A cockpit received various minor alterations during the aircraft's brief production life, and the F-86E was similar. The K-18 gunsight seen here was replaced by the A-1C(M) from March 1951, with the sight being retrofitted to 76 A-model aircraft. The Sabre's cockpit layout was far more logical than the cluttered arrangement seen in the MiG-15. (USAF)

US Navy K-18 gyro-stabilized, lead-computing stadiametric gunsights were installed in all but the last 24 F-86As. The K-18 was preferred to the USAF's K-14, which was designed for use against slower, piston-engined targets. The pilot set the span selection lever to fit the target aircraft's wingspan. The target was then framed by six diamond-shaped images on the reflector. The range control was rotated until the diameter of its projected circle fitted the target. Once the sight had rapidly computed the required lead, the guns could be fired.

A USAF report commented that most combat gun-firing by USAF pilots occurred at "ranges beyond 1,500ft and with ten degrees of deflection" but many opened fire too far from their targets. The first MiG that 2Lt Dick Merian shot at "was only out of range by about a mile. I remember how surprised I was

when I put the pipper on him, pulled the trigger for about four seconds and he didn't light up with hits. Nor did he go down in flames."

Gun vibration could blow a K-18's fuse, and its image became unstable while firing. It was awkward to adjust quickly and unreliable for deflection shooting above 575mph. In Korea, test equipment, parts, and technical expertise for K-18 maintenance were scarce.

From March 1951 the USAF responded to discontent with the K-18 and introduced the A-1C(M) sight and AN/APG-30 radar ranging device (fitted in the F-86E's upper intake lip) as the J-1 system. It had been retrofitted to 76 earlier F-86As by June 1951. Tests showed the J-1 could double the kill probability of manual sights over a range of 300ft, although high-scoring World War II ace Col John Meyer (the 4th FW's commander in September 1950) estimated a 25 percent improvement. It was soon preferred to the K-18, but radar gunsights were not universally welcomed. The J-1 performed poorly below 6,000ft in ground clutter or cloud and sometimes broke lock against maneuvering targets, but it allowed for deflection and bullet fall (over a distance) and provided accurate ranging out to the 3,000ft effective limit of the guns.

Some older pilots including Thunderbolt ace Col Francis Gabreski still preferred their World War II sighting methods – "I just stick a piece of chewing gum on my windscreen and use that as a sight." It clearly worked for him, as he was credited with 5.5 MiG kills in 1951–52. Others preferred the old K-14 sight, and found the 205lb J-1 useful only for long-range deflection shots. In Korea, most combat was "close pursuit," where gunsight reliability was paramount.

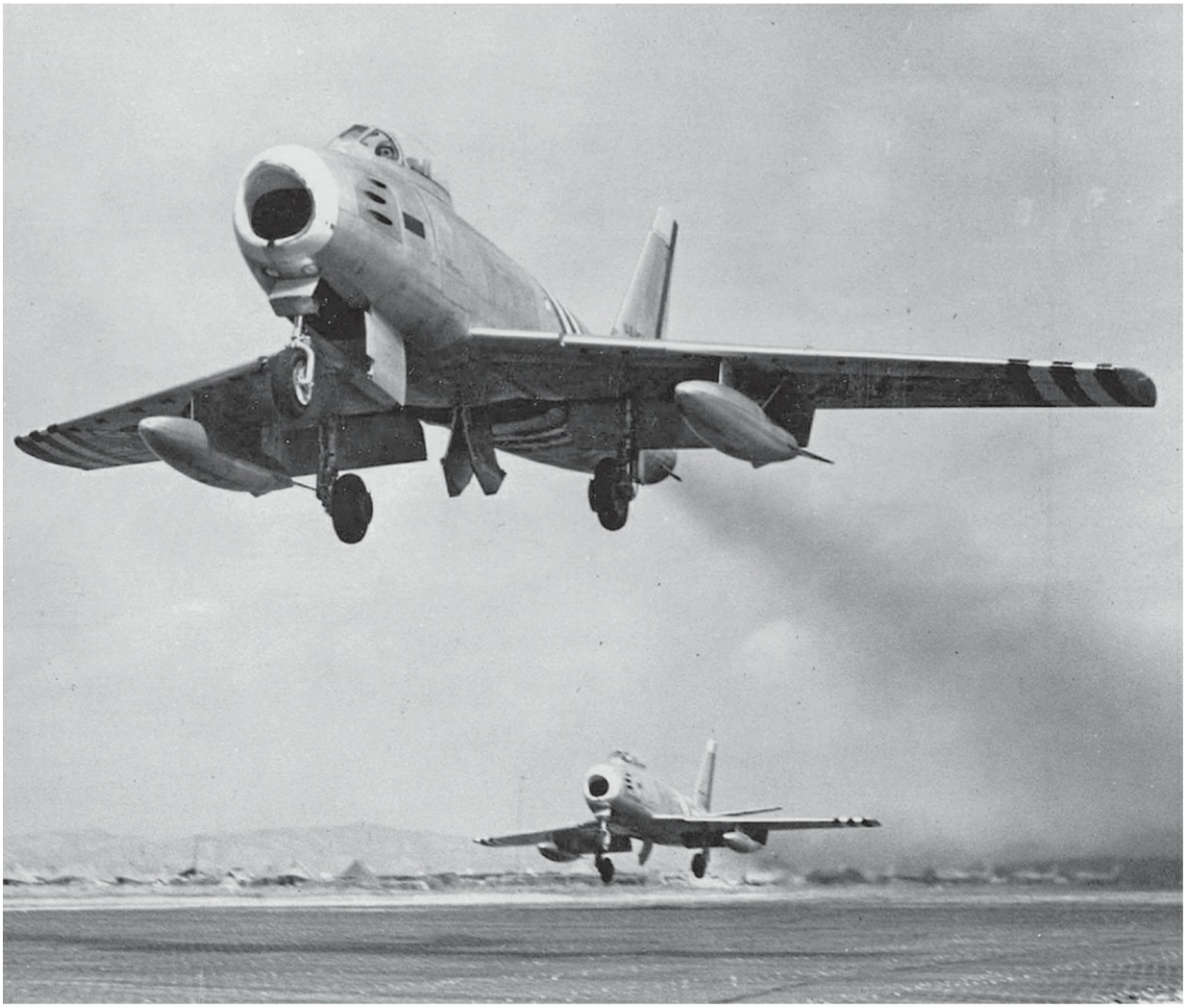
In the Cockpit

Korean war ace Capt Cecil Foster, converting from the F-80C, was impressed that the F-86 cockpit contained "an enormous amount of equipment." Sabres had cockpit defrosting and pilots wore G-suits, although they were cumbersome and made reaching some controls difficult. The original curved windshield which distorted the gunsight view was changed to a V-shape for the F-86A-5 onwards, but it could obscure vision and cause internal reflections, so flat windshields were introduced on late-production F-86Es.

Controls were easily accessible, with the landing gear lever's disc-shaped top

easing recognition by touch and the air brake switch being conveniently located on the throttle. Direct rearward visibility was impeded by armor plating behind the T-14E-1 ejection seat and the radio equipment. More armor was fitted forward of the instrument panel for protection from a bomber's tail guns.

Sabres had a better record for ejections than other contemporary fighters, with 13 fatalities from 85 ejections during 1949–53. Early F-86A pilots were advised to roll the aircraft and drop out in the traditional way, as the ejection seat was only to be used "when normal bail-out is impossible (at extremely high speeds or when the airplane is uncontrollable)." Some pilots flew F-86A-1s with the seat deactivated. In use, it was initiated after the electrically-operated canopy was jettisoned. The pilot raised the seat armrest to jettison the canopy and lock his shoulder straps. An armrest trigger then fired the seat.



Thick smoke trails follow an element of departing 336th FS F-86A-5s from Suwon in the spring of 1951, the jets commencing a 245-mile flight to their patrol area. A pairs take-off was initiated by the leader signaling engine run-up with a rotating finger and then a head nod for a simultaneous brake release. Throttle was advanced to 98 percent to allow the wingman to stay in position. MiGs also took off in pairs, and the leader slightly rocked his aircraft (once he had retracted the gear and primed his guns) to show that everything was okay. His wingman repeated the gesture. (USAF)

Acceleration on take-off was fairly slow, with rotation at around 115mph and lift-off at 130mph after a 2,100ft run. The nose was held at 113 degrees angle-of-attack to avoid the aircraft sinking. Eight-section wing slats on the F-86A/E remained open until 220mph, and at 330mph a climb could be initiated, reaching 48,000ft in 24 minutes. At that altitude an F-86A could be accelerated to Mach 0.91, but the controls became quite heavy, as they did on pull-out from strafing runs. This was alleviated in the E-model through the addition of powered controls. For landing, the undercarriage and flaps were lowered at around 195mph, and final approach began at 155mph with speed brakes extended and the throttle at "idle."

Although test pilots had shown that an F-86A could be recovered from a spin within one turn and 1,000ft by neutralizing the controls, deliberately spinning the Sabre was initially forbidden. Recovery instructions subsequently appeared in pilot's manuals from 1949. The F-86A could enter a violent snap roll in a high-speed stall, particularly if a pilot made a sudden, hard turn above 39,000ft.

The steerable, forward-extending nose landing gear was troublesome from the first prototype flight onwards due to its inadequate hydraulic cylinder and trunnion. Twelve percent of F-86A accidents and a quarter of aborted 4th FW Korean sorties were due to landing gear issues, while engine problems caused another 23 percent. On primitive runways mud and water could enter electrical switches. 2Lt Dick Merian suffered nose gear failure shortly after take-off:

> I lost all hydraulic power and the nose gear would not retract fully. After talking to our fellows on the ground, we concluded that I would have to land with the two main gears extended and the nose gear partially retracted. Not knowing what to expect, I braced for the crash after touch-down by putting my feet on the instrument panel. To my amazement the F-86A went gently on to her nose and gracefully slid to a stop. I was rushed off to the flight surgeon who gave me a couple of shots of booze and sent me on my way.

Most early, relatively low-powered jets carried minimal internal fuel, requiring external tanks to increase endurance for ferry flights. Pilots were supposed to retain the tanks unless they made direct contact with a "bogie," but they were

usually jettisoned upon sighting MiGs. The F-86A-1 could take two 206-gallon tanks, but they caused buffeting above Mach 0.8. From the F-86A-5 they were replaced by 120-gallon models. The tanks' expensive built-in suspension shackles were dropped with them. Non-standard shackles often iced up in flight, preventing release, and some types with only one sway brace could damage wings or tailplanes when dropped. In June 1951 the 4th FW experienced a ten percent tank failure rate.

Cheaper, cylindrical 165-gallon Beechcraft "Misawa" tanks were used for a time, but contracts were eventually placed with Ingersoll ($300 per tank), Borg Warner, and Royal Heater. Occasionally tanks hung up and the pilot could withdraw to reset circuit breakers, but an un-jettisonable tank meant he and his wingman were supposed to return to base. Numerous pilots continued fighting anyway. In June 1951 the 4th FW experienced a "hung" tank rate of five to ten percent. The radio call for MiG-15 pilots to shed their wing tanks was "Zamock!". They too experienced hung tanks, particularly with Chinese-made examples.

Early F-86 Variants

Thirty-three F-86A-1 test examples were followed by production F-86A-5s from March 1949. Up to December 1950, 554 F-86As had been delivered. Production refinements included a more accessible canopy jettison handle, modified leading-edge wing slats operating at lower speeds without slat locks and a "stick shaker" stall warning. Fuel gauges showed pounds rather than gallons. Slats gave the F-86A an advantage over the MiG-15 in horizontal maneuvering at low altitudes, but pilots found that their occasional opening in aerial combat disturbed gun aiming and slowed them down. Slats could also jam during tight turns, but they reduced snap-roll and spin under excessive G.

The F-86A suffered the highest Sabre accident rate, with two-thirds of the aircraft produced having been involved in accidents by mid-1953, compared with one-third of F-86Es and one-tenth of F-86Fs. Conversely, F-86As had the lowest pilot injury rate in major accidents.

The F-86A's traditional wire control cables (rather than the hydraulic system fitted in the F-86E/F) required the use of trim tabs in a supersonic dive, preventing the cables from stretching if the pilot pulled the control column back

hard to recover. 1Lt Jim Kasler dived from 40,000ft to supersonic speed but nothing happened when he tried to pull out. He applied trim twice, and the F-86A recovered violently at 14g, forcing his head against the control column. After Kasler landed, an examination of the jet involved revealed that its right elevator was folded down, skin had been torn off the wings (which were bent) and the right flap was ruined. The Sabre was written off.

F-86As could take a beating. 1Lt Douglas Evans watched one land in August 1951 with no canopy, severe tailplane damage, and holes in the rear fuselage through which daylight was visible. The pilot complained about the noise and draught but said the jet flew home "real nice." 336th FS pilot 1Lt Kenny Rapp brought an F-86E home in September 1951 with its left aileron shot away by a MiG, recovering from a spin en route. 1Lt Bernard Moore returned an F-86A to Suwon with its rudder blown off.

NAA-designed 120-gallon and expensive 200-gallon drop tanks that were intended for ferry flights proliferate in the tank farm at Kimpo in late 1951. Ingersoll-built versions had two sway braces, while others had one, and the tanks could leak or affect handling stability when dropped. It was sometimes possible to shed a hung tank by energetic use of the rudder pedals combined with a firm backward pull on the stick. Cylindrical 165-gallon Beechcraft "Misawa" tanks, originally for F-80s, can be seen here on the right. At Kimpo up to 1,500 tanks were sometimes dropped per week. (USAF)

51st FW F-86E-10 51-2733 *SWEETHEART OF SIGMA CHI*, with the variant's flat windshield and "all-moving" tailplane, is prepared for battle at Suwon. The aircraft lasted until April 5, 1952, when it crashed on approach to Suwon, killing the pilot. (USAF)

A-model Sabres remained in use well into the war years, an example being sharkmouth-decorated 49-1175 *PEG O'MY HEART/Paul's MiG Killer* with which 1Lt Joseph E. Fields of the 336th FS scored a MiG-15 kill on September 21, 1952. One of the last F-86As assigned to the 4th FW, it survived the war and later served with the Oregon Air National Guard.

A-models were supplanted by F-86E-1s from March 1951, the first example having flown some six months earlier. Of the 456 E-models built, 60 were Canadian-constructed F-86E-6s (Sabre Mk 2s) delivered to USAF units in Korea to compensate for slow NAA production.

The aircraft was powered by the same J47-GE-13 as the F-86A-5, although its 460lbs of extra weight reduced performance by two percent. The E-model's new flight control system included an all-moving horizontal stabilizer and fully powered irreversible hydraulics, rather than hydraulically boosted ailerons and elevators and an artificial feel system. Flaps were electrically operated rather than hydraulic. Better handling and more stable (particularly in high-speed turns) at speeds in excess of 575mph, the F-86E was superior at dogfighting than the

earlier A-model. However, 1Lt Jim Kasler preferred the F-86A in combat to the heavier F-86E as the older aircraft could climb 5,000ft higher than the E-model.

Some former F-86A pilots were concerned about hits in the F-86E's hydraulic flight control system since the previous manual system gave a chance of recovery. Hydraulic lines to the tail and emergency hydraulics were located vulnerably close together in the rear fuselage. Pilots who were unused to the F-86E and "pulled g" on it like an F-86A could easily overstress the airframe and possibly black out. The airframe limit was 9g, but 11g was sometimes inflicted with only superficial skin wrinkles. Nose-gear problems were inherited from the F-86A, and the F-86E's aileron actuators could leak hydraulic fluid.

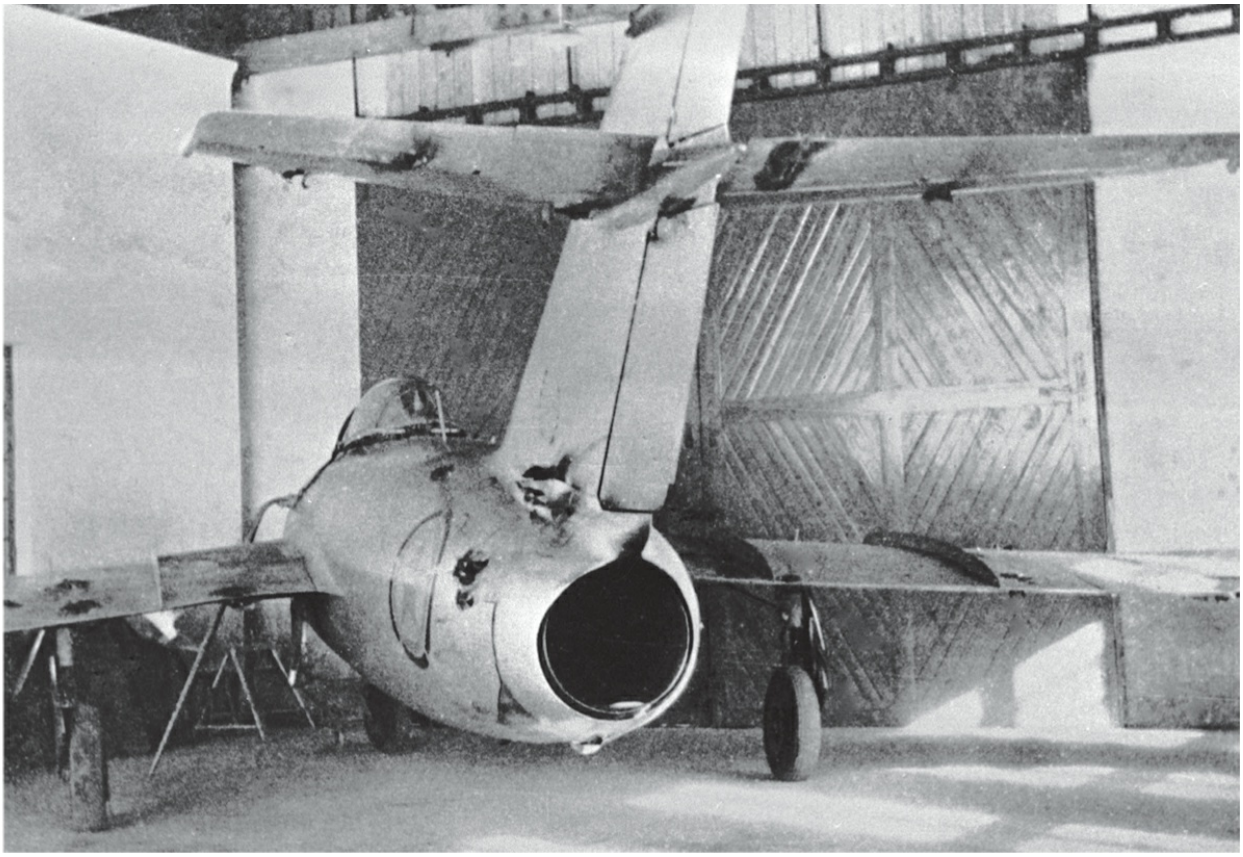
In mid-1951 the Korean air superiority campaign was accelerated. By June there were thought to be 445 MiG-15s in-theater but only 89 F-86As, of which half might be unserviceable. After heavy B-29 losses, 75 ex-ADC F-86Es were sent to the 4th FW as attrition replacements and to convert the two 51st FW squadrons, the 16th and 25th FSs, from F-80Cs. The total of FEAF F-86s available therefore increased to 165, including 127 in Korea.

The Enemy

The MiG-15 was conceived as a high-altitude, fast bomber interceptor, heavily armed to destroy large aircraft. It had to reach 46,000ft and 620mph, have endurance of one hour and performance attributes that emphasized rate of climb and maneuverability. It was simple, reliable, and easy to maintain. By December 1947, 200 MiG-15s were being manufactured every month.

In 1945 Soviet troops captured German data that facilitated the design of a swept-wing fighter, and like NAA designers, Artem Mikoyan and Mikhail Gurevich (MiG) chose a 35-degree sweep. Their first purpose-built jet, the notoriously un-maneuverable MiG-9, reached 560mph with German Jumo 004 and BMW 003 engines. Although Soviet jet engines were under development, welcome assistance came in 1946 when the British Labour government supplied the USSR with 55 superior Rolls-Royce Derwent 5 and Nene 1/2 jet engines to the great surprise of Stalin, who commented "What fool will sell us his secret?" Klimov OKB adapted the Nene for the MiG-15 as the RD-45F. Although the latter was simple and generally reliable, Soviet ace Lt Col Aleksander P. Smorchkov stated that they tended to stop during very tight turns.

The MiG I-310 prototype was first flown on December 30, 1947 by test pilot V. N. Yuganov, and in May 1948 it was re-designated MiG-15. 324th IAD, the unit commanded by Col Ivan Kozhedub (known in Korea as "Krylov"), introduced MiG-15s into frontline service in June 1949, and more than 2,000 were operational with the Soviet Military Air Forces' by the time the Korean War began in June 1950, compared with around 500 F-86s. By 1952 all Soviet tactical units equipped with the MiG-15 were deemed to be combat ready.



Despite being liberally holed by 0.50-cal. rounds fired from an F-86A of the 4th FW, this MiG-15 managed to make it home to Antung. In October 1951, Soviet engineers went to Shenyang to arrange license production of the MiG-15bis in China as the J-2. The Chinese, however, waited and produced MiG-17s instead, together with some MiG-15UTIs. More than 530 battle-damaged MiG-15s like this jet were repaired in the Shenyang factories during the war. (Alamy B9531E)

The MiG-15's air intake and high horizontal stabilizer locations were typical for contemporary Soviet jets. The tail unit configuration was a useful quick identification feature for F-86A pilots in combat. The original mechanical controls were soon replaced by hydraulically boosted systems, but rudder reversal, poor aileron control at high speed, and inadequate roll control persisted

above Mach 0.92 – crucial factors in dogfighting. Under high-G, the MiG-15bis elevators could distort, causing loss of control. Snr Lt Rumyantsev of 29th GvIAP died when his MiG crashed after suffering catastrophic elevator failure during a turning fight with F-86As.

Lack of structural stiffness and symmetrical build for early MiG-15 wings caused uneven lift and angle of incidence, resulting in wing drop and reduced control at high speeds. Aircraft were tested to establish their individual safe maximum speed, after which flexible trim tabs ("knives") were added to the wing trailing edges to improve handling. Each wing had two full-span stall fences. Stalls led to nose pitch-up and an immediate flat spin, together with possible structural failure. Stalls were attributed to wingtip bending, wing sweep, and the location of the horizontal tail. In 56 spin cases witnessed in combat by US aviators in one year, only 15 MiG pilots could recover. A lack of training in spin recovery contributed greatly to these losses. In most cases, the MiGs had not been fired at.

In 2Lt Dick Merian's opinion:

> The MiG had a very bad tendency toward accelerated overshoot. At high speed and high Gs, the aft end of the MiG's swept wing bent upwards, causing the centre of lift to move forward and tuck the plane into a turn or snap roll. On more than one occasion I witnessed a MiG snapping into a spin. Whether it was deliberate or not, I don't know. Our Sabres had a similar trait, but it wasn't as serious. In a high speed 6g turn one had to hold forward pressure to keep the Sabre from snap-rolling.

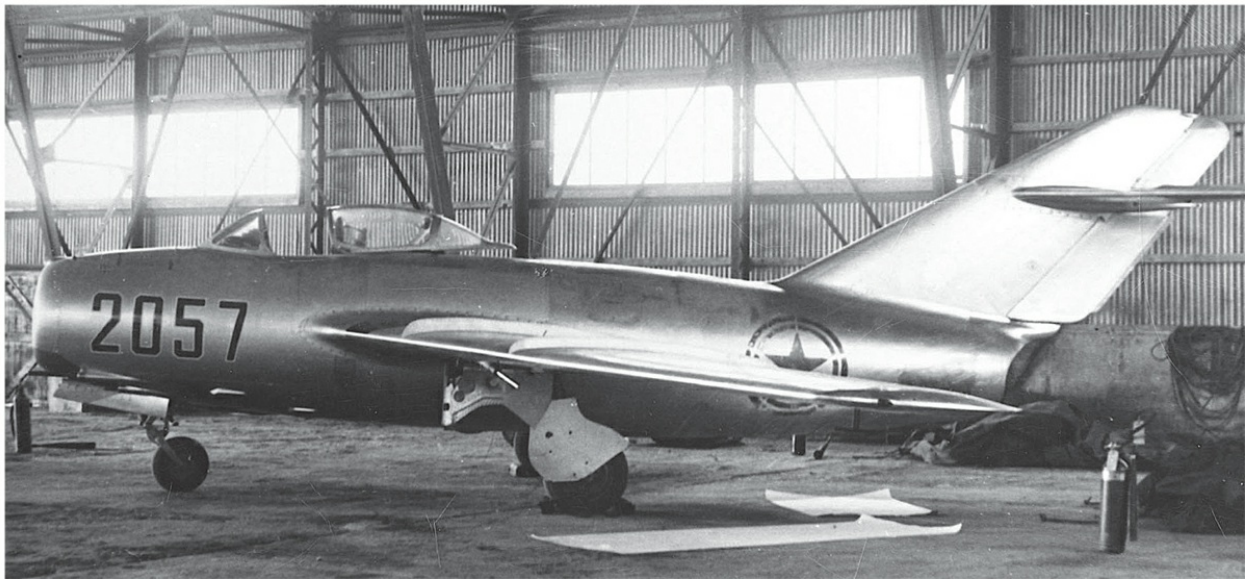
NKPAF MiG-15bis pilot Snr Lt No Kum-Sok poses in his flying gear shortly after he defected to South Korea on September 21, 1953. Note that he lacks an anti-G-suit. (USAF)

The Sabre was stronger and more accurately manufactured than the MiG-15, allowing pilots to perform extreme maneuvers with little fear of structural failure. The wings, devised by NAA's head of structures, Dick Schleiker, used an innovative double-skinned structure without ribs and stringers. Skins were machined with a taper from root to tip, and they featured stiffeners throughout the center section and internal fuel space.

MiG pilots avoided low-altitude combat, particularly for turning fights. Above its "never exceed" Mach 0.92 limit, the jet lost directional stability and suffered from "snaking" due to the un-boosted rudder. F-86As, with better transonic control, cruised at Mach 0.84, while F-86Es could exceed Mach 0.95

(their limiting speed), although some control reversal could occur. At low altitudes, a Sabre could extend its speed brakes, fly a "split-S" and recover close to the ground. Capt Grigoriy Okhay stated that a MiG-15 pilot would have lost control in that situation.

The MiG's un-boosted elevators could cause a sudden pitch-up if a pilot attempted to climb, pull out of a dive, or turn beyond Mach 0.92. MiG-15s, when dogfighting, were often operating at or beyond their stability limits. However, MiGs were tough and resistant to 0.50-cal. fire, making them "not as fragile or as easy to shoot down as we thought," as 1Lt Douglas Evans noted. After an August 19, 1951 battle between 28 MiGs and 30 F-86As, Capt Lev Chukin landed his jet with 57 bullet holes in its airframe.



Defecting Snr Lt No Kum-Sok's MiG-15bis, "delivered" to Kimpo, is seen in Okinawa in its original markings. The aircraft was initially evaluated from here by test pilots Capts John Boyd and Tom Collins and Maj Chuck Yeager. The MiG was later sent to Wright- Patterson AFB, in Ohio, where it has been an exhibit in the National Museum of the USAF for many years. (USAF)

Allied forces had several opportunities to analyze MiG-15s. A Polish example crash-landed in Denmark in March 1953 and NATO disassembled and scrutinized the jet before returning it. Manufacturing was considered comparable to US standards for the engine, and good or "utilitarian" elsewhere. The cockpit was cramped, lacking air conditioning. A Mikoyan-designed, cartridge-fired ejection seat provided no protection for the pilot's face or limbs.

On September 21, 1953, NKPAF pilot Snr Lt No Kum-Sok landed from the

wrong direction totally unexpectedly at Kimpo, surrendering without knowing that the US offered a huge reward for defectors. His MiG-15 was taken to Okinawa, where it was flown by test pilots Capts John Boyd and Tom Collins and Maj Chuck Yeager. They noticed that it gave no stall warning and easily entered a vicious spin. After three turns pilots were told to eject. Yeager flew it above 50,000ft and exceeded its Mach 0.92 limit (a red light came on), with heavy buffeting and pitch-up as it approached Mach 0.95. He dived it from 55,000ft to Mach 0.98, losing all aileron control in the process. He eventually managed to pull out at 12,000ft.

The test pilots reported that the MiG surpassed the F-86 in rate of climb, acceleration, and altitude, and most saw it as light on the controls and a "beautiful flying machine," although Yeager thought it a "quirky aircraft that killed a lot of its pilots." The MiG-15 was considered to be a good bomber interceptor, but poor for dogfighting due to its handling limitations.

Soviet pilots had the chance to examine several force-landed F-86s (including Col Walker Mahurin's crashed E-model, which was downed by AAA on May 13, 1952) and were impressed by the cockpit appointments. One airframe was taken to the USSR for analysis, and "clone" production was considered. It is also thought that a number of captured USAF F-86 pilots were interrogated in the Soviet Union and not returned post-war. According to an article published in the *Los Angeles Times* in August 1993, "of the 56 F-86 pilots that were never rescued by UN forces [after being shot down], only 15 were repatriated after the war. Thirty of the 56 simply disappeared and remain missing. The others were presumed to have died when shot down."

MiG-15bis

The developed MiG-15bis ("improved"), first flown in 1949 and the most numerous production variant with around 7,500 built, was lighter than an F-86A at 11,861lbs (loaded) against 16,357lbs. MiG-15bis deliveries to Korean War units were a top priority. In May 1951, 324th IAD commander Col Ivan Kozhedub exchanged his unit's early MiG-15s for 151st GvIAD's 47 MiG-15bis. He also received 16 brand new airframes from the Novosibirsk factory.

The MiG-15bis had the more powerful Klimov VK-1 engine, giving 5,950lbs thrust (compared with 5,450lbs for the J47-GE-13 fitted in the F-86A), which

was 20 percent more than that produced by the RD-45F. The VK-1 was also more robustly constructed, extending its service life from 100 hours to more than 150 hours and enlarging its size by 15 percent. This in turn meant the fuselage had to be altered internally to allow the engine to fit. However, structural weakness in the airframe persisted, and the enlarged air brakes extended automatically above Mach 0.92 to prevent damage. Internal fuel comprised 380 US gallons of T-1 (JP-4 equivalent), supplemented by external tanks holding from 66 to 158 gallons.

Despite being 524lbs heavier than a MiG-15, the improved jet was slightly faster and could climb 1,000ft higher – it had a service ceiling of 50,840ft, compared to 47,600ft for the F-86A. Larger ailerons and a revised tail cone were fitted with (from 1952) a new canopy with lighter framing, enhancing rearward visibility. Pilots took time to get used to the powered controls and having to judge speed with their instruments rather than "feel" through the control column.

A MiG-15bis had a superior rate of climb (4.62 minutes to reach 32,800ft) to the F-86A, better turning performance, and a service ceiling more than 3,00ft higher, although few engagements took place above 37,000ft. The F-86A was marginally faster at lower altitudes, but the MiG excelled above 40,000ft. In November 1951 F-86A pilots were frequently impressed by the way MiG pilots could quickly accelerate out of trouble using the VK-1 engine. The MiG-15bis turned better at high altitudes, but below 30,000ft and 330mph, the Sabre's slats gave it an increasingly tighter turn as the fight got lower. The MiG's high sink rate when pulling out of a dive exceeded the F-86's. Soviet ace Lt Col Evgeniy Pepelyaev stated that a Sabre could out-turn and out-dive a MiG-15, but the latter climbed better.

Both fighters were short-ranged, which proved to be much less of a handicap for MiG pilots who fought close to home. For the Sabre, with a range of less than 500 miles, it was perhaps the aircraft's most serious drawback in Korea. It limited combat time and required a shuttle of closely timetabled flights so as to maintain a Sabre presence over a target.

Armament

Although a 45mm cannon was originally proposed, MiG-15s had the MiG-9's

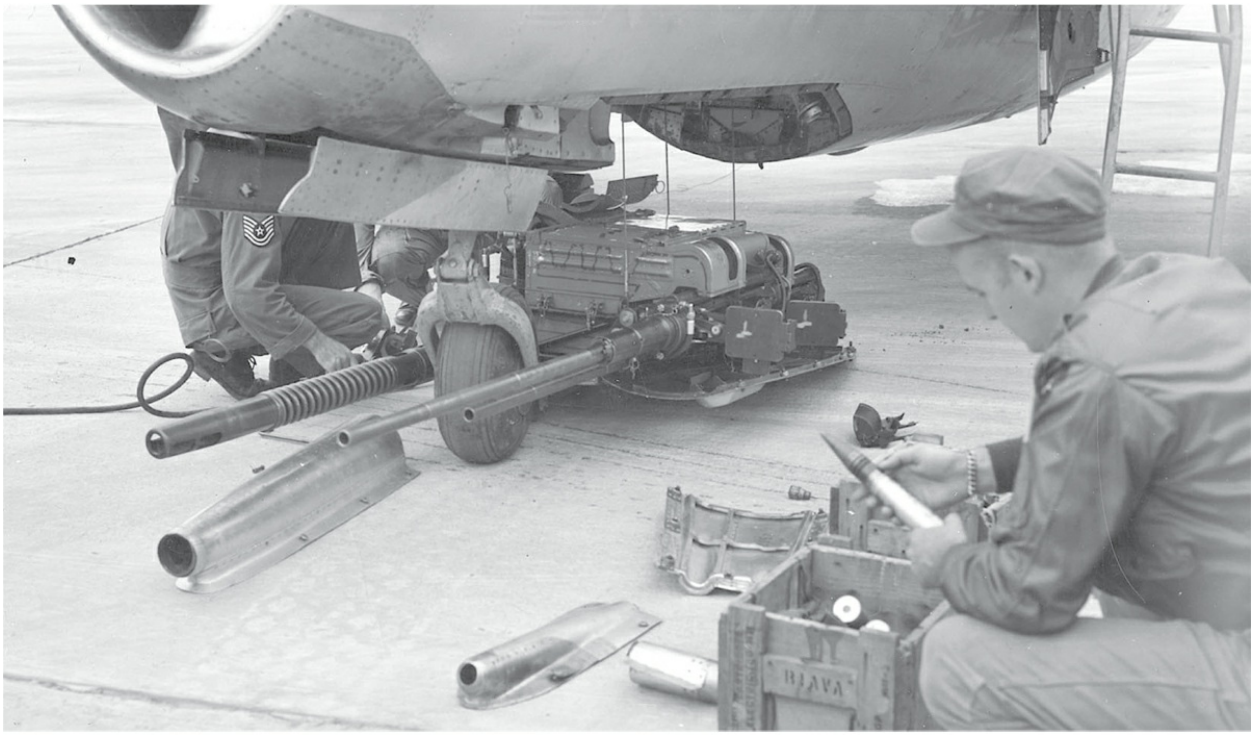
armament – a slow-firing 37mm N-37D with 40 rounds that could be fired out in just six seconds. Initially placed within the intake splitter, the weapon caused engine stalling and was relocated below the nose. The N-37D was effective against slow-moving bombers (it could bring down a B-29 with two hits) but not jet fighters in a turning engagement. The cannon's ammunition was similar to that used by the Soviet 61-K anti-aircraft gun, prompting one F-84 pilot to call it "horizontal flak" after he survived an encounter with a MiG-15. The N-37D was also prone to jamming.

The MiG-15's 23mm and 37mm high explosive cannon shells could do substantial damage when they hit, but the F-86's robust construction could absorb a lot of punishment. Here, Maj Curtis L. Utterback's F-86A is shown after it was hit in the left flap during an engagement in 1951. (Tony Holmes Collection)

Two Nudel'man-Rikhter NS-23KM, or faster-firing NP-23, 23mm cannon with 80 rounds each were also installed. They allowed only 5.3 seconds of firing time for each gun. Both the N-37 and NP-23 had low muzzle velocity at 2,300ft per second, although the latter weapon gave increased density of fire. Pilots usually fired short sighting bursts from the 23mm cannon, which often allowed an F-86 pilot to escape, before engaging the target with the N-37's bigger shells. Guns were installed on a retractable tray for quick rearming, or replacement with a pre-loaded tray.

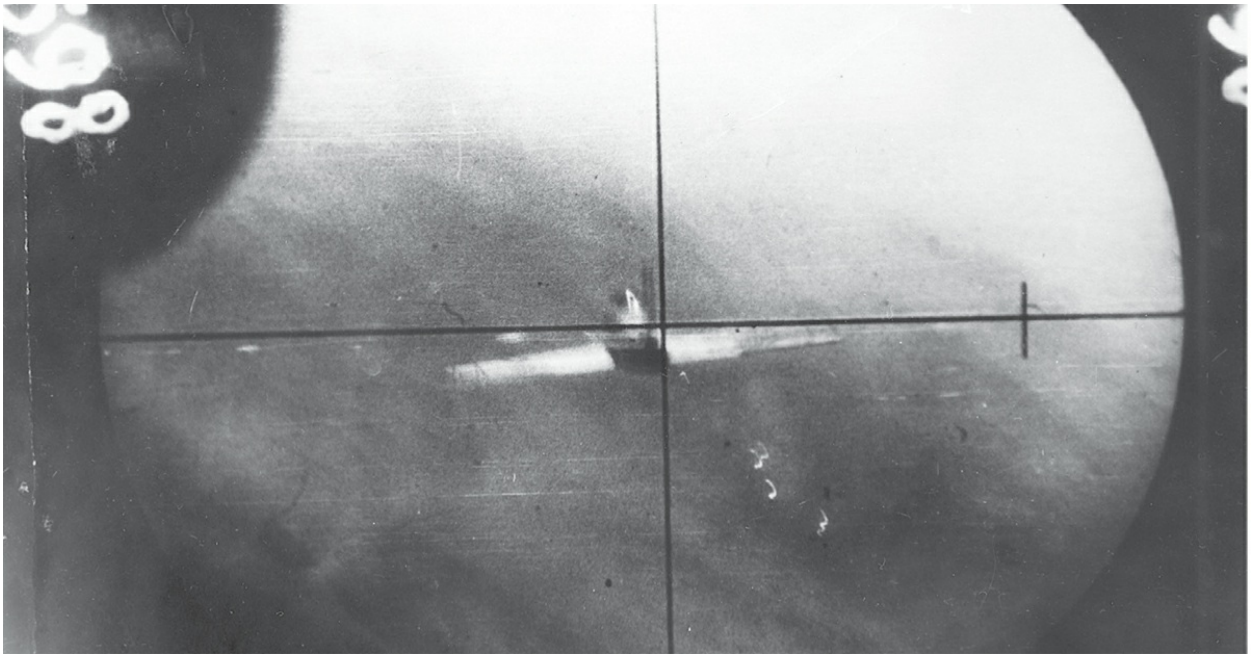
Shells from the 37mm and 23mm guns had different ballistics, and they were not harmonized with the pilot-set gunsight "pipper." Distance and sight setting were calculated by the pilot, and if he tried to follow a maneuvering Sabre and exceeded 3g, his gunsight gyros would tumble. Inexperienced pilots often began firing far out of range, which meant that their tracers could be seen and avoided.

Accuracy of the MiG-15's armament against fighters was poor, partly because the gun mounts lacked rigidity. However, as Capt Dick Becker commented, "Both 37mm and 23mm had explosive shells. It only took one or two hits to be blown up. If we were hit in the fuselage or near the engine, it was the end." MiG pilots often "ruddered" the aircraft to spread their gunfire, or estimated deflection visually. They could open fire at longer range (up to 3,280ft) than Sabre pilots. When attacking B-29s, the MiGs dived at 620mph, firing from outside the bomber gunners' effective range of around 1,500–2,000ft, giving them about eight seconds to aim and fire.



The MiG-15bis weapons suite – one N-37D (left) and two NP-23s (right), mounted on a single retractable tray complete with ammunition canisters. This allowed for quick "combat turnarounds," which meant that in less than a minute the whole tray could be winched down, disconnected from the cables, and replaced by a pre-loaded tray that came complete with new weapons. Sabre pilots were impressed by the MiG-15's weight of fire, and they described the fighter's whole nose lighting up with red blobs of fire ("flaming golf balls") as rounds emerged from its two NP-23 and single N-37 cannon. (USAF)

The MiG-15's ASP-1N (later, ASP-3N) gyro-stabilized optical gunsight of World War II vintage, copied from the British-supplied Mk 2D sight and similar to the USAAF's World War II era K-14, was useless above 500mph and inoperable under high-G conditions. Pilots, therefore, had to rely on tracers to sight their guns. They considered the Sabre's gunsight and armament superior for close-in fights up to a distance of 1,500ft, and in dogfights where quick-fire bursts were often required.



When MiG-15 pilots found that the aircraft's ASP-1N gyro-stabilized optical gunsight was unusable at speeds in excess of 500mph or when the jet was experiencing high-G, they were forced to rely on tracer rounds to sight their guns on a target. The squiggly lines to the bottom right of this F-86 denote 23mm tracer rounds being fired behind the fleeing USAF fighter from a distance of just 255ft. (Tony Holmes Collection)

CHAPTER 5

ART OF WAR

The next two kills were in the best fighter pilot tradition of Mannock, Udet, Nungesser, and other heroes of the first dogfights in World War I. I found myself and the MiG at the same airspeed, altitude, and going in the same direction. Immediately, we got into a flat scissors maneuver trying to get on each other's tail. Dropping my speed brakes and using aerodynamic braking, I fell in behind the MiG at a range of about 600ft. The first burst of a few seconds caused my opponent's aircraft to light up almost from wingtip to wingtip. Before I could fire again, the canopy went by, followed by the pilot.

This was 1Lt Harold Fischer's account of one of his ten MiG kills in Korea, and a reminder that the jet age did not change many of the long-established techniques of aerial combat. 1Lt Dick Becker commented that the first Sabre combat pilots "knew very little about the MiG-15. What we learned was developed as we started air-to-air combat. Originally, our tactics were similar to those used in World War II, but we made changes as we fought."

F-80C pilots had the first jet-on-jet fights with MiGs, but they soon relied on Sabre top cover for their short-ranged attack missions. Maj George Loving,

commanding the 9th FBS assigned to the 49th Fighter-Bomber Wing (FBW) at Taegu in 1951, was aware of the "almost daily air battles between MiGs and F-86s." Faced with MiGs and no Sabre escort elements, his F-80s could escape at low level or stay and fight at full throttle, watching for the much faster MiGs to shoot before breaking sharply and then positioning themselves to return fire. The air-to-air losses of only 14 out of 263 F-80 casualties owed much to the Sabre escorts. All F-80C and F-84E strikes after October 1951 reached their targets successfully.

Capt Frederick C. "Boots" Blesse of the 334th FS in his Sabre shortly after claiming his tenth victory on October 3, 1952. (USAF)

Many pilots on both sides had learned air-fighting skills in combat with the

Luftwaffe, and the same principles still applied. Flying towards the sun could dazzle a pursuing opponent, while attacks "out of the sun" could catch an adversary unawares. Maintaining flight integrity was vital, and so was the ability to identify enemy aircraft at long distances. Very often, the outcome of a fight depended on who saw the potential target first and took the initiative. With the MiG-15 and Sabre being so evenly matched, skilful tactics could avoid a stalemate fight. Furthermore, with both jets looking visually similar, superior aircraft recognition was vital if "friendly" casualties were to be avoided.

While communist pilots relied heavily on ground-control radar guidance and rigidly imposed tactics, the USAF approach, lacking long distance ground control, allowed for more individual interpretations. When future ace Capt Frederick C. "Boots" Blesse joined the 334th FS in early 1952 following a previous tour in-theater flying F-80Cs with the 49th FBW, he judged that there were still no clear ideas about tactics and no tactics manual. "There were some great pilots," he said, but also "a whole bunch of pseudo-experts." Some pilots flew 100 missions without seeing a single MiG and then went back to the USA as "tactics experts." Having claimed ten victories in less than five months of combat, Blesse subsequently returned home and wrote his tactics manual on air-to-air gunnery, *"No Guts, No Glory!"* which became a standard training source within the USAF.

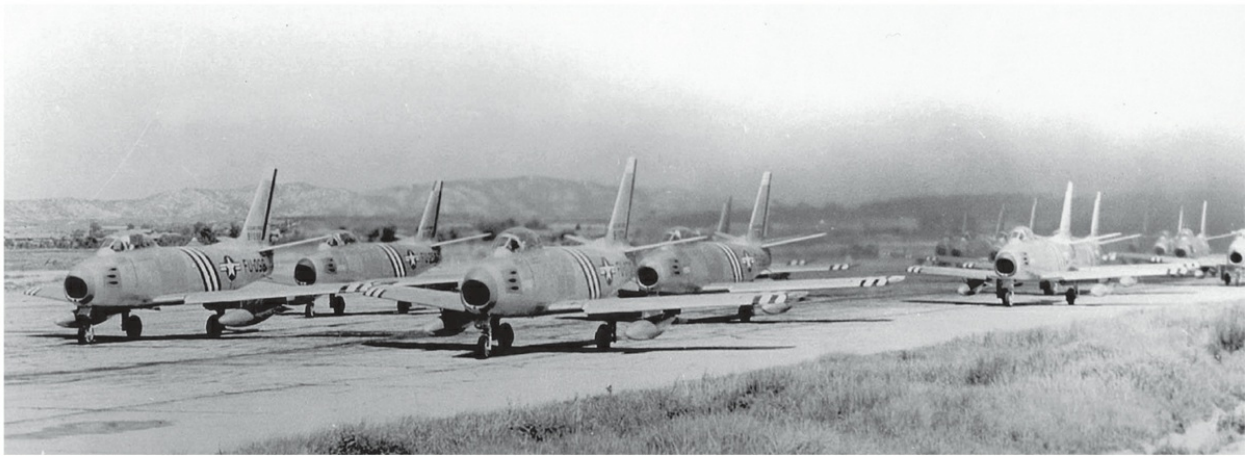
USAF fighter training continuously improved, keeping pace with the changes in tactics in Korea. By contrast, Soviet units, due to the secrecy surrounding the USSR's involvement in the conflict and the insular nature of their various commands, had no "cross-tell" to acquaint new arrivals with operational issues, making their "learning curve" extremely costly in terms of the number of jets lost and pilots killed. The USAF's jet fighter tactics were first codified by double-ace Maj "Boots" Blesse in his seminal, and classified, publication *"No Guts, No Glory!"* of March 1955. (USAF)

Central to Blesse's doctrine was the idea that the lead pilot and wingman should stay together. He argued that Sabres should try to attack the rear element of a MiG formation, which would then descend to get help. The F-86s should then switch to the lead MiG flight, while a second Sabre flight stayed high in case the rear MiG element returned. An alternative tactic required the Sabres to stay engaged to the second MiG element until it was necessary to take on the lead MiGs. Or, both elements could be committed to the offensive, although

this removed mutual support between elements.

USAF jet pilots quickly realized that keeping their speed as high as possible was vital. “Getting slow” meant losing maneuverability and being unable to accelerate out of trouble due to the jet engine’s long spool-up time. During dogfights full throttle was used most of the time, unless a pilot wanted to make his adversary overshoot. Some pilots flying over the Yalu maintained 100 percent power throughout most of the flight, reducing engine life from 800 hours to around 550 hours and sometimes causing cracked turbine blades.

By March 1951, when the 4th FW began operations from Suwon, its combat tactics were more refined. On arriving at the patrol area at staggered intervals, the Sabres split up so that they could converge on any MiGs that appeared. The lead flight hoped to stir up the communist fighters by flying over their Antung base. If dust clouds from take-offs were seen on the runways, the Sabre leader would call in the other flights. If one flight was threatened by a large MiG formation, he called “Hey Rube” to summon the other flights.



Some of the 31 F-86As launched by the 4th FW from Kimpo on November 30, 1951 to frustrate a concerted attack on the USAF radar installations on Cho-do Island. Faced with a dozen Tu-2 bombers, 16 La-9 fighters and a MiG-15 escort of up to 50 aircraft, the Sabre pilots downed ten communist aircraft without loss, including six Tu-2s and a MiG-15.The exhaust fumes generated by these mass take-offs could cause real visibility problems for pilots at the back of the pack. (USAF)

Because there were only two Sabre squadrons at Suwon, MiGs under ground-controlled interception (GCI) sometimes slipped through their screen to attack bombers. On March 12, 1951, for example, 12 MiGs penetrated the escort while the Sabres were heading for another reported fighter formation. Although MiG-15s succeeded in bouncing an 8th FBW F-80C flight, two jets from 28th

GvIAP collided while converging on the same Shooting Star and exploded, killing both pilots.

In the first month of combat, Col John Meyer's 4th FW pilots evolved the "jet stream" tactic which brought Sabre patrols into position at five-minute intervals. As historian Robert F. Futrell explained, this "provided a minimum of four separate, high-speed forces within easy supporting distance in time and space. The first Sabre flight to spot MiGs called out their location, altitude, and heading, and when a fight developed, all Sabre flights converged on the point of contact."

F-86 pilots often attributed their success to better training and tactics rather than any superiority in aircraft. Success in a fight depended on a pilot spotting MiGs approaching across the Yalu and alerting his flight to their location and heading. Captured islands off the North Korean coast housed US listening posts and navigation beacons. An early-warning radar on Cho-Do Island five miles offshore monitored Manchurian airfields, although F-86 pilot 1Lt James Kasler was told that it could not detect or monitor MiGs at low altitude.

Radar sites used the code-words "Dentist" or "Dentist Charlie," and referred to MiG formations as "trains." The word would go out that "another train left the station" when a MiG formation took off. From May 1952 a tactical control center was added to vector Sabres against MiGs. Previously, Sabre flights could sometimes climb to intercept "contrails" only to discover they were other Sabres.

When approaching enemy territory, pilots, usually in three flights of four for a fighter sweep, unlocked their shoulder harnesses, loosened safety belts and concentrated on swiveling their heads to look out for MiGs. Guns were given a test burst. Once battle began, inevitably against superior odds, the main task was element integrity. The "shooter" (flight or element lead pilot) registered 82 percent of MiG kills, and 93 percent of aces' kills were scored from that position. Wingmen were there to protect the leader, although they did manage to score 138 victories – 13 of them while directly defending their leader and 22 by taking over attacks on aircraft damaged by a leader who then ran out of ammunition.

Wingmen were vital. Many shootdowns of both Sabres and MiGs happened because wingmen became separated and a lead pilot was taken by surprise while focusing alone on a target aircraft. If a wingman lost his leader, he then had to

try and join another flight for protection or hastily withdraw. Veterans developed a sixth sense to warn them of pursuers. 2Lt Dick Merian recalled flying wingman for "some really great pilots – Cols John Meyer and 'Gabby' Gabreski, Lt Col Glenn Eagleston and Capt Billy Hovde to name a few. But there were some guys who just shouldn't have been up there in the first place. They put my butt at risk as well as their own."

Data showed that in more than 80 percent of kills the USAF pilot had the initiative in the engagement or was the more aggressive protagonist. When engagements began, flights usually split into elements if they were facing superior numbers of MiGs.

For interceptions of approaching formations in May 1951, up to three MiG squadrons (24 aircraft in total) would launch. They first met the Sabres, which would fly ahead of the attack force and set up a barrier around 50 miles south of the Yalu. MiGs attacked the Sabres from above, keeping them off Maj Gen Georgiy Lobov's 303rd IAD squadrons that were exclusively tasked with tackling the fighter-bombers. When the Sabre-engagers dived to intercept the USAF fighters, they were usually seen by the 4th FW pilots, who in turn frustrated their attack by preventing the MiGs from getting within firing distance. Soviet pilots then had to climb again, and the squadrons usually broke up into pairs or individuals as they again tried to get onto the tail of a Sabre.

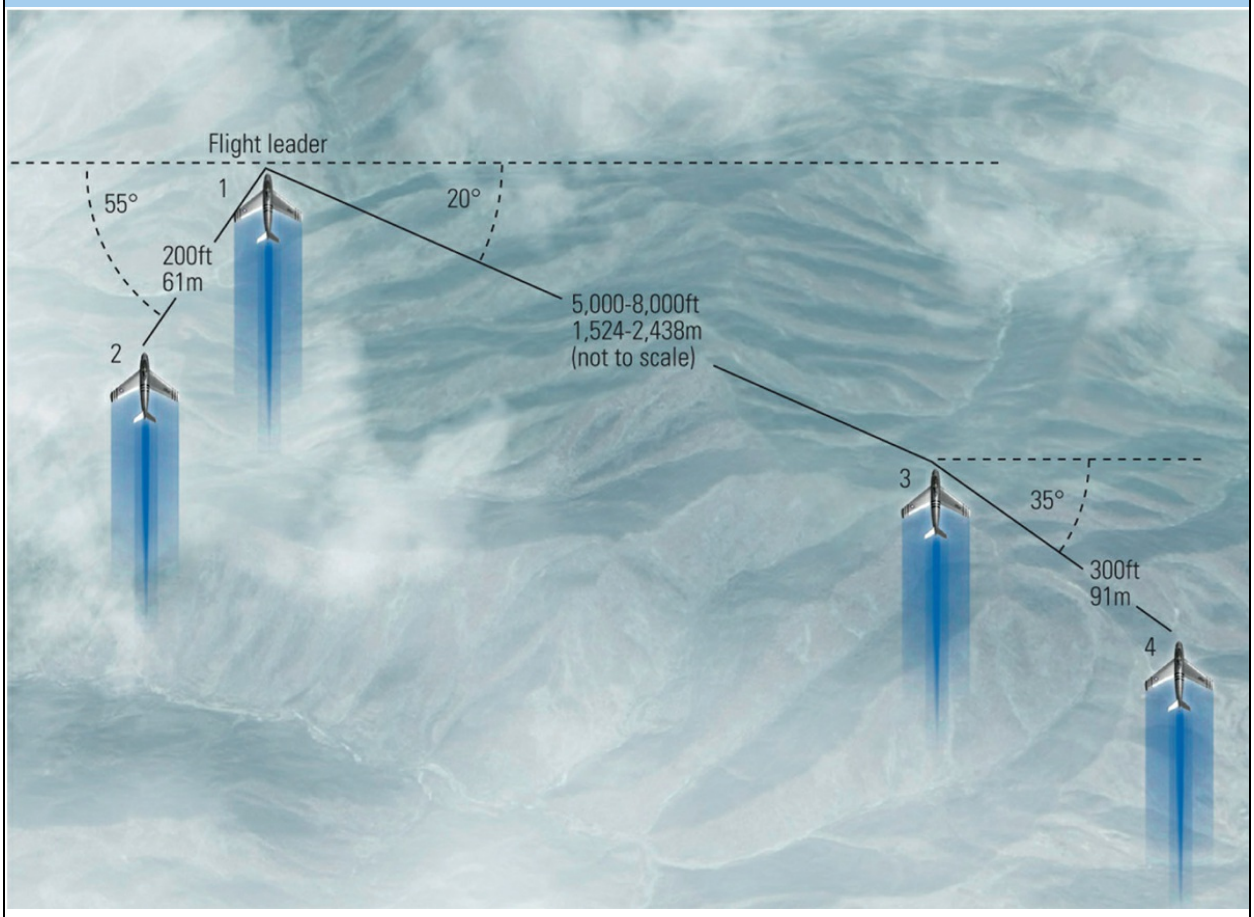
MiG units, suffering a shortage of personnel in mid-1951, often sortied a "trio of pairs" in which two pairs attacked the enemy and the third covered them, remaining at high altitude to dive on targets of opportunity. Sabre pilots in return began to place pairs of experienced pilots aside from the main group to catch any trailing MiGs as they passed. One Sabre trio, thought by the Soviets to be led by the 4th FW commander, included two wingmen to let him concentrate on his targets. Other Sabre tactics included maneuvers to trap an attacking MiG. One Sabre pair made a diving left turn and the other element climbed, turning right, so whichever pair the MiG pursued the other Sabre element could get behind him. The 336th flew formations using two sections of eight Sabres in parallel, with "Red" and "White" Flights in one "box" and "Blue" and "Green" Flights in the other.

2Lt "Lon" Walter described the tactics used in mid-1951:

> At the time we patrolled as four flights of four. This made maneuvering at higher altitudes very

demanding. We maintained our 16-ship integrity until a fight began, and then each flight broke off on its own. Elements would often be unable to remain as a flight of four, and instead they would fight as two-ship teams. It was rare, however, that a wingman lost his element leader. Our orders were to disengage and return home immediately if we found ourselves alone.

F-86 TACTICAL FORMATION



The USAF's basic four-ship "combat spread" fighter formation, like the Russians' "zveno" and the Luftwaffe's four-ship "finger-four," was developed during World War II. The flight included two elements, each with a leader who was the "shooter" accompanied by a wingman flying at a 200-300ft distance from the leader. Wingmen had the principal task of protecting the leader by keeping a look-out for the opposition while the leader concentrated on a "kill." In practice, the wingman spent a considerable time concentrating on keeping strict position in formation with the leader, while at the same time making quick rolling maneuvers to check the sky around him. This made him more vulnerable to attack, and Soviet pilots often concentrated on shooting down the No 4 wingman first.

The considerable effort involved in maintaining formation, particularly at high altitudes, often caused flights to break up into elements or even solo aircraft during combat. The flight lead and No 3 pilot, as "shooters," had priority in attacking MiGs, and some became so focused on their prey that they took little notice of their wingmen. Others were more generous, allowing all members of the flight to take shots if they had the opportunity.

Being outnumbered was normal in 1951, as 1Lt Dick Becker recalled, "We never had more than 16 aircraft in the air at one time in the beginning. We were outnumbered five-to-one in a fight and sometimes as high as ten-to-one. It was not unusual for a flight of four Sabres to take on 30 to 40 MiGs. The minute we flew near the Yalu River they came over from Antung."

Soviet sources suggest that the USAF overestimated MiG numbers, and that there were only 72 in Manchuria in April 1951. Until the summer of 1951 there were less than 100 Sabres in Korea.

The later A-1C(M) gunsight, which operated with the AN/APG-30 radar set, was only retrofitted to 76 F-86As – it was the standard gunsight used in the F-86E, as seen here. The circular range dial is positioned at an angle at the left and the adjacent target span wheel, rotating vertically, is to its right. The compactness of the A-1C(M) meant that the pilot had a far clearer forward view than his opposite number flying the MiG-15. (Terry Panopalis Collection)

Soviet fighter pilots saw the US "combat spread," four-ship formation with

one principal shooter (usually the flight leader) as clumsy and ineffective. It could also cost lives. On October 18, 1950, just before the 4th FW left for Korea, three 335th FS aircraft were lost when the flight leader crashed his formation into the Potomac River while leading the jets down through cloud.

USAF tactics were also modified after 1951 when some units, including the 335th FS, which included aces 1Lts James Kasler and James Low and Capt Robert Love, introduced a policy of allowing all flight members to be shooters if the occasion arose. Aces were usually sent home after their fifth kill. As ace 1Lt Dick Becker pointed out, "I guess the Air Force figured we were more valuable to the enemy if we were shot down. We were fighting over enemy territory the entire time."

Soviet units in 1951 used Luftwaffe-style, four-ship fingertip formation flights ("zvenos") of two elements ("paras"), each with a "sword" (shooter) and "shield" (cover), within groups of six or eight MiGs. The roles of "sword" and "shield" could be easily exchanged. F-86 four-ship formations were revised as the war progressed, and pilots facing superior odds increasingly split into elements to enter combat. They also had to fly close escort in a much tighter tactical formation when protecting B-29s, and this tasking – and formation – limited their scope for response when MiGs attacked. F-86A pilot Capt Douglas Evans often wondered what he could accomplish by spending most of his time "staring at his leader" in a slightly relaxed form of "show formation" during bomber escort missions.

In most early F-86A engagements, the fights consisted of tail-chases and firing from the enemy's "six o'clock," with little need, or opportunity, for deflection shooting. Where deflection shooting was possible, hits in the central fuselage of a MiG were more likely to disable the engine or enter the cockpit. Standard maneuvers by both sides included the "chandelle" – a sudden 40–50 degrees climbing bank (or "combat turn") to gain altitude and change direction, followed by a wingover and descending turn. This was a favorite MiG tactic to evade pursuit.

In a "split-S," a pilot would hope to lose his pursuer with a steep dive leading to a sudden reversal of direction. The Immelmann was similar, but initiated by a steep climb. MiG pilots regularly used the superior vertical acceleration of their jets to escape pursuit – Lt Col Glenn Eagleston and 1Lt John Odiorne were

about to secure a firing solution on a MiG that had threatened the former's Sabre when the Soviet pilot simply climbed away into the sun.

A "yo-yo" attack saw the F-86 dive on a turning target. If a re-attack was needed, the energy from the dive could be used to climb and make a second descent. Against a turning target, a pursuer could tighten his turn by "yo-yoing" in a climb and then diving to achieve a firing position behind his opponent. In July 1951 MiG pilots started to modify the "yo-yo," forming a World War I-style Lufbery Circle 5,000ft above the Sabre flights in order to defend each other's tails. They then dived to attack individually or in pairs, before using their jets' superior rate of climb to avoid pursuit as they returned to the mutual protection of the circle.

A stacked Lufbery (dubbed a "roundabout" by Soviet pilots) could be used to defend a point target. Two pairs formed a circle, covering each other's tails in a smaller version of the "wagon wheel" subsequently used by the Vietnamese People's Air Force a little over a decade later. Another two circles were stacked at higher altitudes. Sabres usually attacked the lower circle first, at which point the high "roundabout" would dive on them, before "zoom climbing" to form a new circle. Any Sabres that climbed to follow this bait would be attacked from behind by additional MiG flights from a lower echelon.

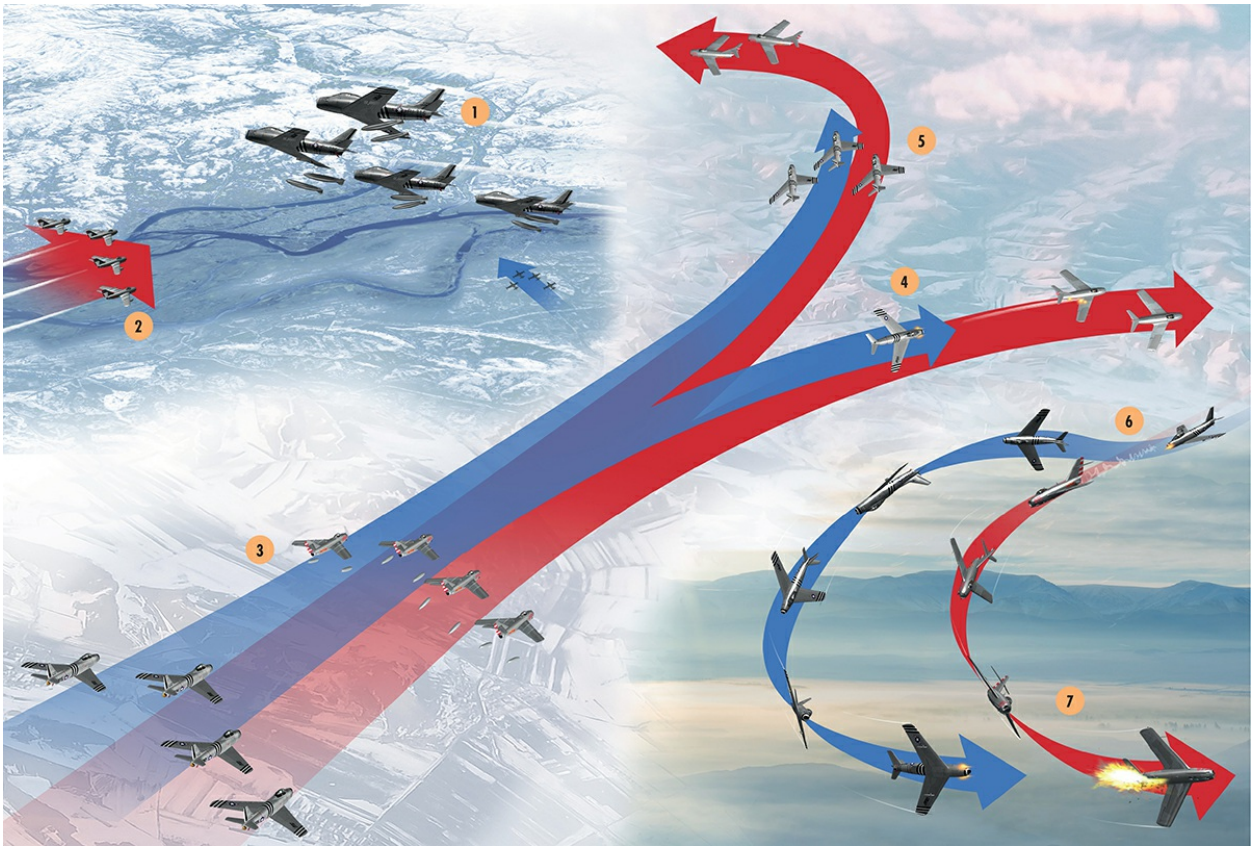
In areas where UN aircraft operated at low altitudes, pairs of experienced MiG pilots would approach "on the deck" and "hit from beneath" in their blind spot, escaping by using ground masking. Another vertical tactic in 1951 was called the Etazherka ("the rack"), and it required squadrons or groups of MiGs to maintain vertical separation and keep in visual contact so that they could converge on intruders. A variation on this was the "zoom and sun" in which MiGs waited at high altitude with the sun behind them, dived on Sabres and then returned to their untouchable "perch" at 48,000ft.

On May 20, 1951, the 335th FS's "Awning Baker" Flight patrolling over Sinuiju met four MiGs that immediately formed a Lufbery Circle. Two suddenly broke away and zoomed to a higher altitude while Capt James O. Roberts and 1Lt John Hungerford entered a turning fight with the other pair until they too climbed steeply out of the circle, pursued briefly by the two Sabres. Although one MiG took some hits, all four resumed a high-altitude Lufbery safe in the knowledge that Roberts and Hungerford could not engage

them. Moments later the two Sabre pilots came across another MiG element that also went into a Lufbery Circle, which Roberts entered. He was gaining a good position on one of the MiGs when they both dived out of the circle and fled for the safety of Antung.

In a World War II-style "pursuit curve," a fighter made a shallow dive behind his adversary, gathering enough energy to make an attack and then a climbing turn to reverse and re-attack if necessary. A "scissors" engagement saw two opposing aircraft or flights simultaneously attack each other, pass head-on and reverse to re-attack, criss-crossing like scissors to get on each other's tails by making a pursuer overshoot. Reversals and turns, or speed changes using air brakes, were calculated so that the victor ended up behind the target aircraft. Scissors tactics were used in horizontal pursuits or a dive. Also, the "barrel roll" – a rolling climb, and dive maneuver – was used to cut across an enemy's turning circle and get behind him, or force him to overshoot. Occasionally, large formations of MiGs made mass head-on attacks, relying on the weight of their gunfire rather than accuracy to hit UN aircraft groups.

Extending air brakes to make a pursuer overshoot could have unforeseen consequences. World War II ace Capt Serafim Subbotin of 176th GvIAP claimed two F-86As on June 18, 1951. His formation of eight MiGs bounced 16 Sabres, and he fired on one before going to the aid of a pilot who was being attacked by two F-86s. During the fight he was hit and his engine faltered, so he jettisoned his canopy to release the burgeoning smoke and entered a spiral dive, followed by the Sabres. He deployed his air brakes and Capt William Crone (of the 334th FS), firing at him from close behind, ran into the damaged MiG, tearing off part of his Sabre's wing. Despite punishing negative G-forces, Subbotin ejected safely as his MiG became uncontrollable, but Crone was killed in the collision.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1445hrs, DECEMBER 17, 1950

YALU RIVER

1 Four F-86A-5s of the 336th FS's "Baker" Flight commence a fighter sweep in "combat spread" formation at 25,000ft from the southwest to the northeast along the Yalu River at speeds simulating slower, more vulnerable F-80Cs.

2 Four 29th GvIAP MiG-15s, led by Maj Keleynikov, are seen below at 18,000ft by "Baker 2," prompting "Baker Lead," 336th FS CO Lt Col Bruce Hinton, to tell his pilots to drop their underwing tanks in preparation for combat. However, they fail to receive the order due to radio failure in Hinton's jet. They drop their tanks in any case. The Soviet pilots have also seen the Sabres, but assume they are another formation of MiGs due to the jets' swept wings. They continue heading for an F-80 flight at lower altitude.

3 As "Baker" Flight dives in behind the MiGs, Maj Keleynikov at last realizes that he and his men are under attack. He immediately orders his pilots to shed their external tanks.

4 Hinton makes a descending turn to the right behind the No. 2 MiG-15 and moves in on it as the pilot, Maj Yakov Efromeenko, commences a shallow banking turn to the left. Hinton opens fire from a distance of 1,500ft and sees fuel streaming from the fighter. The lead MiG, meanwhile, has moved to Hinton's right side and is 200ft higher than "Baker Lead."

5 The remaining three "Baker" F-86As follow MiGs 3 and 4 as they turn left and head for Antung airfield across the Yalu River. "Baker 2" and "4" break off their pursuit and head east.

6 Hinton follows the No. 2 MiG in a 35-degree left banking turn. Efromeenko extends his air brakes and Hinton is caught in jet-wash turbulence. Maintaining control, he fires into the MiG's engine from a distance of 800ft behind it, registering hits.

7 Both pilots slow, and Hinton drops five feet below the burning MiG, which is losing height in a 45-degree left banking turn. Hinton pulls back to a range of 2,000ft and fires again. The MiG erupts in flames, flips over onto its back and crashes into the snowy ground below. Although Hinton sees no parachute, Efromeenko ejects successfully.

For dogfighting, MiG-15 pilots were trained to take advantage of their superior rate of climb and use vertical maneuvering where possible to gain the advantage. They were also trained to use all the techniques established during World War II. These included maintaining speed, sustained maneuvering, careful aiming, and the vigilance that came to be known as situational awareness. All were adapted to the jet scenario, where fights took place over a greater volume of airspace.

The main Soviet tactic was "hit and run." Given adequate warning of an attack, GCI would send MiGs to a high altitude before the enemy arrived and then vector them into a head-on approach in pairs, meeting the incoming enemy at around 68 miles from the target that they were defending and allowing time to engage. One fighter regiment was the lead group which took off first, engaged escorting fighters, and broke up Sabre formations. Five minutes later, a second group of two or three regiments engaged the incoming bombers or fighter-bombers. A command reserve group of one or two regiments took off 15 minutes later to cover the return of the earlier groups. In late 1951, several additional flights waited at low altitude to zoom climb and attack Sabres from below.

The F-86 pilot's escape maneuver in an emergency was a rolling breakaway involving back stick with full aileron and rudder for a nose-low, maximum-G turn to throw off the enemy's aim. He could also try to use trim tabs to tighten the turn. At the start of a confrontation, as the leading group of MiGs dived on the Sabres, they tried to make a half-roll and "gun turn" to attack the communist jets from behind, concentrating on the first pair of attackers. A second pair of MiGs then sought a vulnerable target, such as a separated wingman. Following their solitary pass, all MiGs then "chandelled" back to altitude using their momentum to outclimb the Sabres, before repeating the pattern of attacks.

As a last resort, very experienced pilots might induce a spin to evade a pursuer. Capt Sergey Kramarenko described how an F-84 pilot achieved a firing position behind him and he pulled back violently on the control column, forcing his MiG to pitch up, stall, and enter a spin from which he knew how to recover. Although similar moves were possible with the F-86, there was a high degree of risk involved.

In the mid-1951 "pincers" tactic used by Soviet units, two MiG flights headed towards the enemy, moving slightly apart from each other at around 33,000ft as instructed by GCI. Before making contact with the Sabres, they descended to 15,000–19,000ft and turned back towards the north following vectors that would make the two MiG flights converge from different directions and altitudes. A third MiG group could also enter between the "pincers" as cover, or to bounce any Sabres that had avoided the tactic.

Experienced MiG pilots evolved a distraction tactic to try and lure victory-hungry Sabre pilots away from escorting the strike groups and ambush them so that other communist jets could be directed to the now-vulnerable strike aircraft. Soviet formations were divided into three groups: attack (interception), cover (for the attack group), and reserve (one or two pairs). When the enemy approached, the GCI would alert the high-altitude interception layer. Pilots at the front of the group looked for threats in the forward hemisphere, while the rear group would weave to check for threats from behind.

In the fall of 1951, the biggest air superiority struggle of the jet age was in progress. The 4th FW was charged with providing cover for UN interdiction forces. From September 1951, MiG formations of more than 90 fighters at different altitudes began to cross the Yalu, often led by expert Soviet "Honchos" and displaying better organization with new tactics, including line astern attacks and Lufbery Circles. Sometimes, four flights of MiGs made line-abreast, head-on attacks on the same Sabre groups, using similar tactics to those employed to deadly effect by Luftwaffe fighter pilots against B-17 formations.

MiG and F-86A pilots maneuvered to avoid being "bounced," although the majority of the Soviet fighters involved remained at high altitude to enable diving attacks to be made on the Sabres. The communist pilots rarely enjoyed the element of surprise, however, as their contrails were usually visible. They often "yo-yoed" in the hope of finding a Sabre target before regaining altitude. Radios would then be full of chatter, which meant warnings and instructions were missed.

Soviet early warning radars, mainly the Pegmantit P-3M and PVO-Strany P-3A (both with World War II American origins), were ineffective above 32,000ft. Four early warning radar and eight visual early warning sites were established in North Korea extending out to 170 miles, but their range was usually limited to

around 65 miles by the country's mountainous terrain. This routinely led to GCI giving MiG units very short warning times of approaching enemy formations. GCI was conducted on a number of channels, causing confusion for the Soviet pilots, particularly when they also had to cover the operations of Chinese pilots. Soviet pilots felt that the Sabre leaders could quickly distinguish Russian from Chinese flights, prioritizing attacks on the latter.

MiG units were also tasked with defending the new airfields at Namsi, Taechon, and Saamcham so that the NKPAF could operate from them. These airfields therefore became more difficult to attack than those outside "MiG Alley."

"Stove Pipe" missions were flown between Cho Do Island and Chinnampo during strikes from October 1951. Two F-86As with their topsides camouflaged in Olive Drab paint (knocking 20mph off their top speed) orbited and monitored the fighter-bombers' radio frequency, and they would call in the F-86 top cover if MiGs appeared. The "Stove Pipe" pilots liaised with a ground observer on an island in the Yalu estuary with a good view of the Antung bases, and they also provided weather reconnaissance information.

From November 1951 MiG units began to launch two 75-strong "bandit trains" across the Yalu some 40 miles apart at 40,000ft. The two trains (known as the "west coast train" and "central train") would meet over Pyongyang, and then the whole formation headed north, looking for Sabres. A third train was launched to cover the other two as they moved north to refuel. Sabres or fighter-bombers, usually low on fuel, would be engaged en route by individual flights who dived to intercept UN aircraft. This heavy MiG presence meant that all UN air activity, including reconnaissance, required escort fighters anywhere between Pyongyang and the border.

Sabres were at their most vulnerable as they withdrew from a fight, short of fuel and ammunition and far from home. Soviet GCI would try to vector MiGs behind them for a "bounce," particularly if a Sabre was alone. As 1Lt Dick Becker recalled:

Although this photograph is posed (fighter pilots never wear their hats in a real mission briefing), the briefing board these aviators from the 334th FS are looking at is real, showing a typical F-86 fighter sweep formation. "Red" Flight is in the lead, "Blue" Flight is offset "down sun," and "Yellow" Flight (covering) is positioned "up sun" to intercept any MiGs that might attempt to interfere with the mission by attacking the other flights. Seated second from right is 1Lt Richard Becker, while the pilot to his right is 2Lt Andy Anderson, who was rated one of the best wingmen in the 4th FW. (USAF)

We only had so much fuel to engage in combat when we were near the Yalu River. When we departed, they sent another eight, 12, or 16 more MiGs as we worked our way back. It was awfully hard each time when another group of aircraft [MiGs] came to meet us as we headed south. We kept turning so that they did not shoot us down.

We had one great natural advantage in Korea, however. The jet stream always flowed from northwest to southeast. We always had a 100mph tailwind going home, which helped. We climbed and took all the altitude we could. We kept the throttle wide open until the engine quit. Then we set our best glide speed and started home. This happened several times. That trip home was a long way without an engine!

Sabre pilots would try to stay over "MiG Alley" long enough for their opponents to have to descend and return to base, chasing them north to the Yalu border area. "Bingo" fuel for Suwon-based F-86As was usually 1,000lbs when over "MiG Alley," allowing a return trip of up to 300 miles at 40,000ft/Mach 0.93, with idle power used for the last 100 miles and 250lbs of fuel remaining on landing.

In order to reach Suwon with next to no fuel in reserve meant climbing as high as possible, stop-cocking the throttle (the canopy would then ice over), and gliding. Near to home, the engine was re-started with enough fuel – usually less than 500lbs – for an approach and landing. The F-86 had a very accurate fuel gauge, which was a vital attribute in combat. In 1951 the 4th FW experienced around ten dead-stick (engine out) landings per week by fuel-starved Sabres. Many jets returned from patrolling near Pyongyang with less than 100 gallons remaining, and fuel shortage was a frequent reason for breaking off promising engagements. Like all 4th FW pilots, 1Lt Dick Becker soon became used to flying his F-86 with its J47-GE-13 running on little more than fumes:

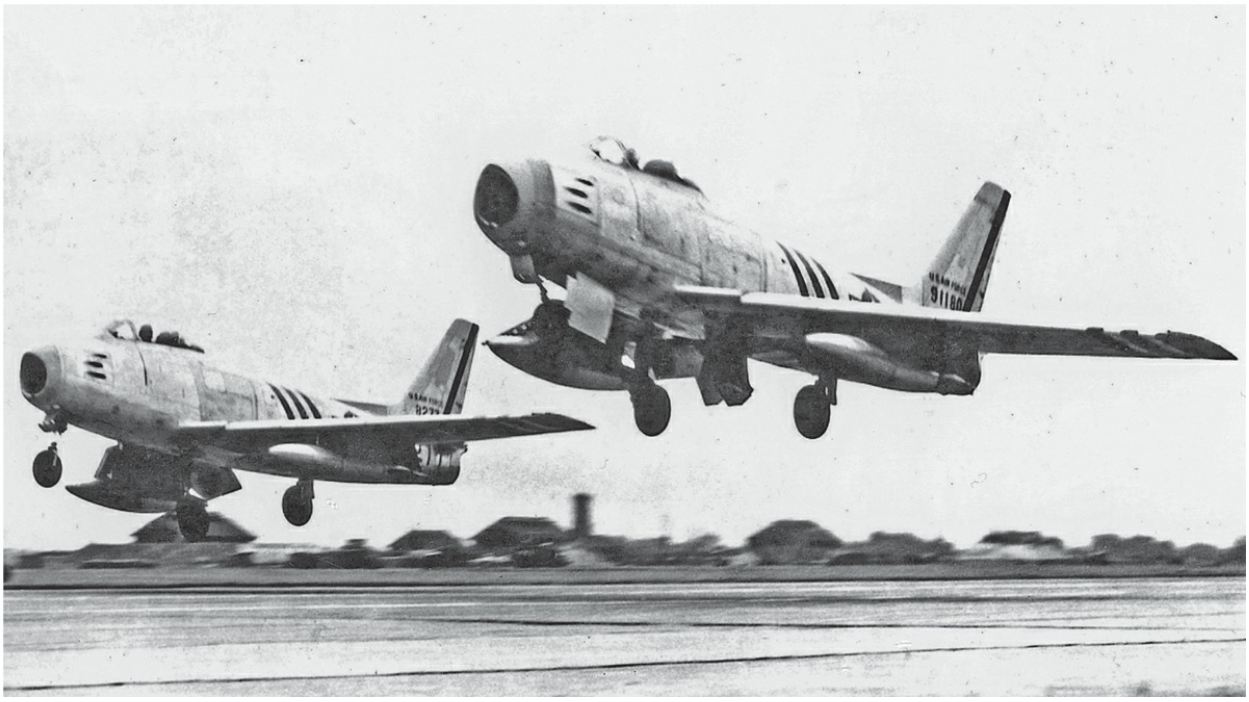
> The controls got a little stiff without engine power. I remember once bringing home a flight of four, and everyone dead-sticked in. Once we got down, our commander and operations officer did not appreciate it very much! Sometimes it was necessary. Often, we got into fights with our flight of four against as many as 30 to 40 MiGs. We may have been behind them, but we did not want to let them go because if we turned south and headed for home they too has soon turned around and were on our tails. It was not always easy getting out of the area, and, of course, we were fighting over enemy territory.

A Sabre could glide for up to 80 miles from a 30,000ft start without headwinds. In the Fall of 1951 some 4th FW humorists suggested changing the unit's name to the "4th Glider Group" after a series of dead-stick landings.

Lt Col Bruce Hinton's report in July 1951 comparing the F-86A and MiG-15 based on 4th FW operations since December 1950 stated that the wing had been involved in more than 400 engagements, during which its pilots had 45 claimed kills, seven probables, and 75 damaged. He estimated that the F-86A turned slightly tighter then the MiG, but that the latter climbed and accelerated better above 25,000ft. The Sabre's air brakes were better than the MiG-15's [larger brakes were fitted to the MiG-15bis, however], and the Soviet fighter had a poor fire control system. Hinton thought that half of MiG pilots "performed

with skill, precision, and good judgement" but others were "either unable to properly handle the MiG-15" or "could not combine headwork with skill to obtain the best performance in evading or attacking the F-86."

Sabre pilots at the time believed the MiG-15 could achieve supersonic speed and recover from a spin better than a F-86, and that the MiG had similar control responses and roll rate to the American fighter. Hinton reported that the MiG could out-dive the Sabre until they reached lower altitudes, when the F-86 could catch up.



F-86A-5 49-1180 bore the nickname *Squanee*, used by Lt Col Bruce Hinton on his Sabres, and *Little Butch* during its time with the 336th FS. The aircraft had been "borrowed" from the 56th FW in order to make up the numbers of F-86A-5s available for the 4th FW's Korean War deployment in late 1950. Like 48-277 (left), it returned to the USA for Air National Guard service post-war. (USAF)

CHAPTER 6

COMBAT

From December 15, 1950, the 4th FW commenced operational missions from Kimpo, with the wing launching four-aircraft formations to patrol 220 miles northwest from the base at 27,000–35,000ft (below contrail altitude), initially at low cruising speed. The latter was soon increased after the Sabres were bounced from above by MiGs flying at far greater speeds. Missions lasted about 60–90 minutes, with around 25 minutes spent on patrol. MiGs cruising at 50,000ft controlled the fight, as the F-86As could barely reach 42,000ft.

F-86A-5 49-1132 of the 335th FS, later transferred to the 336th FS, flies over typically inhospitable North Korean terrain in the early spring of 1951. When subjected to extreme maneuvers in combat, the Sabre's rear fuselage could become twisted and flaps and ailerons' skins routinely buckled or split. Nevertheless, the F-86 could absorb considerable combat damage. (USAF)

Four Sabre flights were scheduled to arrive five minutes apart to stretch the patrol time. When engagements occurred, they were usually at high altitude, with Sabres exceeding their maximum permissible speed of Mach 0.95. Often the fight was limited to one pass, but longer engagements went to lower speeds and altitudes. In a melee, targets appeared and disappeared in seconds and new threats appeared even if pilots were "swiveling their necks" to detect them.

Several engagements happened prior to the major confrontation on December 22, with Lt Col Bruce Hinton being credited with the F-86's first success on the 17th. Five days later, the first Sabre loss occurred during the first large-scale clash between the 4th FW and 177th IAP. Sixteen MiGs had bounced eight "Red" Flight Sabres led by Lt Col Don Nance from high altitude during a patrol over the Yalu at 35,000ft. In a 20-minute dogfight at all altitudes, "an enemy burst in the initial pass hit one friendly aircraft, which was last seen aflame and in a flat spin," as noted in the official post-mission report. The aircraft (49-1176) lost was being flown by Capt Lawrence Bach, his Sabre having been hit in the wing roots by a long-distance deflection shot fired by Capt Nikolay

Vorobyov. Bach ejected and he was captured upon reaching the ground.

Six MiG kills were awarded to the 4th FW that day, including one to Meyer. US Navy exchange pilot Lt Cdr Paul Pugh also scored one as flight leader. After receiving a warning, he reversed, followed the MiG through the cloud base and fired from behind. Soviet pilots claimed five Sabres, but the figures credited to both sides were disputed.

After their 22 December losses, MiG pilots studied Sabre missions and decided to wait at high altitude, delaying their attacks until the USAF fighters began to withdraw with minimum fuel. They did not appear in numbers again until 30 December, when 36 MiGs briefly faced 16 Sabres but were reluctant to engage and soon withdrew, with two damaged aircraft.

The 4th FW's initial secret orders that had sent them to war in November 1950 were ambitious – to deploy to K-26 Pyongyang airfield in North Korea. 2Lt Dick Merian was among the pilots who soon received very different instructions as UN forces were driven out of North Korea, and he was flown to Johnson AB in Japan instead:

2Lt Dick Merian joined the 335th FS directly from flight school in July 1950, having just 35 hours of jet experience – none of it in the F-86. While in-theater, he flew as wingman to a number of highly experienced aces from World War II. (USAF)

> The initial combat with MiGs was flown around Christmas time from Kimpo by "older heads" with combat experience while the rest of us remained at Johnson. There, our flight leaders continued to train us, mostly concentrating on how well we protected their "six o'clock" during mock combat. Unfortunately, none of us greenhorns had ever fired a gun! This was remedied by loading one gun [ammunition was needed for the war], one time and permitting us to make two passes on a [target] sleeve. Needless to say, I didn't score on the sleeve.
>
> Thus prepared, we went to war. Part of the 335th FS was sent to Taegu to fly air-to-ground missions to stem the Chinese advance. We were armed with two five-inch rockets and our machine guns. My ignorance of how to fire the rockets was complete. I asked Capt Ernie Mack, our armament officer, two questions – how do I arm and fire the rockets and how does one aim them? Ernie was very helpful.
>
> The first time I ever fired all six guns in combat was awesome! I was really impressed with the power of those weapons and the racket they made in the cockpit. On one mission, flying with [Capt] J. O. Roberts, we spotted some gun emplacements at the end of a bridge. We strafed the area and I tried to aim where "J. O." had fired. After the debriefing I told "J. O." that I hadn't seen the guns. His response was, "Dick, look back over your shoulder when you pull off the target. That's when they shoot at you." On the next mission I did just that, and I was absolutely amazed that so many guns were shooting at me.

As 2Lt "Lon" Walter later pointed out, during the 4th FW's time at Johnson AB, "there were virtually no facilities in Japan to conduct live air-to-air or air-to-ground gunnery. When the small detachment went to Taegu all of the youngsters wanted a piece of the action, experience or no!"

Before the 4th FW had to withdraw to Japan on January 2, 1951, where "Johnson was loaded with fighter units recently pulled out of Korea as the Chinese advanced," eight MiGs had been confirmed as shot down for the loss of one F-86 during the course of 234 sorties, of which 76 had seen MiG engagements. The Fifth Air Force had also had two F/RF-80As and an F-84E destroyed by MiGs. 324th IAD lost no aircraft in its early skirmishes, while 176th GvIAP suffered three losses on its first mission. Aerial combat with communist jets was then interrupted, since F-86As could not reach "MiG Alley" from Japan for it was 300 miles beyond their range.

As previously mentioned by 2Lt Dick Merian, from January 14, 335th FS Detachment B of six F-86As returned to South Korea's primitive Taegu airfield, with its pierced steel plank runway that appeared to undulate as jets took off and parking areas that were frozen mud – a concrete runway was eventually built in the summer of 1951. Sharing the base with the 9th FBS/49th FBG, the

detachment flew 158 sorties, mainly ground attack, as it used the F-86A in this role for the first time. The MiGs at this stage stayed away. 2Lt "Lon" Walter was one of the pilots involved:

> It was a bitterly cold January, and the pot-bellied stove worked overtime to keep our huts liveable. For my first ever combat mission I drew a flight of four led by Capt Martin C. Johansen – "Joe" to his contemporaries, but "Capt Johansen" to me. I suspect Joe viewed this flight with some trepidation. We were all second lieutenants [Otis P. "Flash" Gordon, Jack Bryant, and "Lon" Walter], and my total F-86 flight time of around 95 hours was typical. None of us had ever fired a gun or shot a rocket from an F-86, or any other type of aircraft for that matter, but our leader briefed the three of us very carefully and went over the cockpit switchology and techniques to be used for the mission.
>
> Our aircraft were armed with 1,200 rounds of 0.50-cal. armor-piercing incendiary in case we attacked a tank, and two HVARs [high-velocity aircraft rockets]. We also carried two 120-gallon drop tanks. We were told that the five-inch HVARs were very unpredictable, and not to expect to hit anything with great precision – fat chance in any event! We were to proceed to the Suwon vicinity and contact a "Mosquito" forward air controller (a USAF pilot flying a T-6 Texan, sometimes with an army observer in the rear cockpit).
>
> As we climbed to about 20,000ft the flight to Suwon took only a few minutes, and we got a good look at the snowy, mountainous Korean terrain. Capt Johansen soon contacted "Mosquito Poison," who told us there was a large Chinese force in foxholes on a hillside overlooking Suwon air base. "Mosquito Poison" would mark the target with a smoke rocket, and he cleared us to direct our guns and rockets into the vicinity of his rocket impact.
>
> We all saw the smoke and set our switches to "guns" on the first few passes, then "rockets" when we were low on ammunition. We then fell into trail formation and set up a gunnery pattern. For the life of me I could see no foxholes and no sign of life on that hillside, but I watched our flight leader roll in and fire at the ground. I reasoned that as I dived towards the target I'd probably be able to make out what I was shooting at. Wrong! We made about three gunnery passes each, then "Capt Joe" called for us to set up two rocket passes. All I could say was that we seemed to be hitting the mountainside.
>
> As "Flash" Gordon pulled out of his second rocket pass, Jack Bryant called out, "Look at that! They're coming out of their holes and running up the hill!" I still saw nothing but trees. Nevertheless, I lined up again on where we had all been shooting and fired my last rocket. Bryant called, "Good shot, Lon, you hit right in the middle of them." We were out of ammunition now and "Mosquito Poison" thanked us for a good job and cleared us to return to base. Since it had been the first time I'd ever fired ordnance from an airplane, I really had no concept of judging range, but had simply bored in until I thought I was at about the right distance, then fired.

The flight later heard that the "Mosquito" crew reported more than 200 KPA troops had been killed. Lon wondered why the communists had run from their foxholes:

> They probably figured these strange-looking fighters with swept wings [and drop tanks] had just about finished with their guns and rockets and were about to drop napalm. I only flew four more missions from Taegu and the entire detachment was recalled to Johnson AB. The F-86A obviously was not

suited to the fighter-bomber role, but perhaps our few missions resulted in lessons which were used to design and build the excellent F-86F and F-86H fighter-bombers.

2Lt (later Brig Gen) Alonzo J. "Lon" Walter gives the photographer the thumbs-up from the cockpit of his F-86A at Suwon in April 1951. The previous month, despite having only 75 hours of flying time in the Sabre, he had been part of the first detachment sent to this airfield by the 335th FS. (USAF)

UN forces launched Operation *Thunderbolt* on January 25, 1951, which enabled them to retake Seoul and Kimpo en route to the Han River area, pushing the communists back. Gen Earle E. Partridge ordered the refurbishment of these airfields and Suwon for jet use.

The 334th FS returned to Korea on February 22, moving to Taegu, which was just within range of Pyongyang. It progressed to badly damaged Suwon on March 10, with the 336th FS from Japan replacing it at Taegu. Operations over "MiG Alley" did not recommence until March from Suwon, which was given a concrete runway but still had muddy tracks in place of taxiways. Taxiing aircraft passed ten feet from those that were landing. By April 22 Suwon was improved sufficiently for all three squadrons to use it.

Aces High

334th FS pilot 1Lt Dick "MiG Wrecker" Becker would become the second Korean ace (on September 9, 1951) after his squadronmate, Capt James Jabara, who achieved this accolade on May 20, 1951. Becker was credited with having damaged a MiG on December 30, 1950, followed by two probable victories on March 22 and 24, 1951. He was flying F-86A 49-1257 as "Eagle Red 3" as part of Jabara's flight for the second of these claims, the quartet of Sabres being confronted by 20 MiG-15s. Becker later recalled:

> He [Jabara] and his wingman took on ten and they split, and my wingman and I took the other ten. After a tremendous battle we were separated. By then neither of us had a wingman. I hit one of the MiGs at a distance of between 800–1,400ft. I had him burning in a flat spin. He went through an overcast sky estimated at 4,000–5,000ft. Eight other pilots were coming to help and saw that MiG going down. I wrote the intelligence report that went to Fifth Air Headquarters, but it was returned as a "probable" because we did not see it hit the ground. There was no question it was gone. Subsequent Soviet reports indicated that the MiG pilot, Snr Lt Iu Savinov of 151st GvIAD, was still in a spin as he passed through the clouds and was unable to recover or eject.

Capt James Jabara of the 334th FS is given the "hero's lift" at Suwon by 2Lt Gene Holley and Maj Ed Fletcher on May 20, 1951 after the two MiG kills that made him the first USAF ace of the Korean War. Holley damaged a MiG-15 in the same fight. (USAF)

1Lt Becker's first confirmed victory, on April 22, was in another hard-won fight. That day, the tried and tested tactic of sending staggered waves of Sabres over the Yalu River worked particularly well for the 4th FW when 36 MiGs committed south to intercept 12 Sabres led by Lt Col Glenn Eagleston. Just as

they did so, a second formation of 12 F-86As appeared, and both sides became involved in the hour-long conflict. "I started at 47,000ft and fought with him for at least ten minutes," Becker later explained. "We ended up on the deck flying between mountains. I finally hit him and he crashed into a mountain within a mile of the Yalu."

Single MiG victories were awarded to Lt Col Glenn Eagleston, Capt James Jabara, and 1Lts Dick Becker and Bill Yancey, and four more communist jets were classified as having been damaged, all without a single F-86 loss in return. One of the downed MiGs, flown by Capt E. N. Samusin, was apparently destroyed by a "hunter pack" of Sabres awaiting the Soviet jets' return to Antung. Although this practice was officially banned because of the airfield's location in Chinese territory, it became an increasingly common reason for MiG losses in 1952–53.

From a Soviet perspective, these early engagements were hampered by late launches by operational control so that pilots never gained sufficient altitude and speed to allow them to use their MiGs to their full potential. There was also poor coordination between flights, squadrons, leaders, and wingmen during the April 1951 engagements.

On April 3, for example, 176th GvIAP, in its first major aerial clash, lost formation integrity and the Sabres had numerical superiority and, initially, an altitude advantage. Capt Jabara (in 48-257) used both to claim his first confirmed MiG kill that day, while 334th FS CO, and World War II ace, Maj Ben Emmert damaged the fighter flown by Snr Lt Reitarovsky so badly that it had to be written off. Snr Lt A. P. Verdysh's aircraft was also destroyed after it was hit by 1Lts Rory McLain and Bill Yancey.

Following this one-sided action, 324th IAD pilots changed tactics. From then on, they would gain altitude after take-off over Manchuria, rather than over North Korea. Furthermore, in an attempt to intercept USAF aircraft in a more timely manner, four pilots were now kept strapped into their jets on cockpit alert, with the rest of the squadron on short notice alert near their aircraft.

MiG encounters increased rapidly during the course of April. Airfield attacks were considered urgent, as many were being improved by Chinese laborers with the possible intention of hosting NKPAF units that would then mount aerial attacks on South Korea. A series of small, daily harassment raids by B-29s on

nine airfields, accompanied by Sabres strafing the bases, ensued between April 16–23. By the end of the month reconnaissance indicated that all airfields were unusable apart from Sinuiju, close to Antung. Some primitive airstrips remained for use by "Bedcheck Charlie" Po-2 biplanes mounting night nuisance flights.

One airfield in Pyongyang was attacked on May 9 by no fewer than 312 USAF and US Marine Corps aircraft, with F-86As and F9F Panthers providing top cover. Fifty MiGs appeared, but few attempted to intervene and only one was claimed as damaged by an F-86A. Some 38 communist aircraft were on the airfield at the time of the attack. In mid-July the communists gave up repairing airfields.

2Lt "Lon" Walter recalled one of the May 1951 battles:

> I was flying with "Awning Blue" Flight ("Awning" being the callsign used by the 335th FS) as "Awning Blue 2." My flight leader was Maj Ernest W. Mack. As we patrolled along the Yalu River at 35,000ft we observed a formation of more than 16 MiGs slightly below us, flying in the opposite direction. Our squadron leader called for a descending left turn so that we could drop in behind the MiGs, but he cautioned that there might be another formation waiting for us. He was correct. As we began our attack we were jumped by a second group of MiGs and a melee ensued. At one point, I observed an F-86 shooting at a MiG, with another MiG on his tail, followed by still another F-86. It was a deadly, four-aircraft Lufbery Circle, all firing at each other.
>
> Our radios were filled with chatter, as they always were when a fight started, whereas our radio discipline was excellent while we were patrolling. Our wing commander, Col Johnny Meyer, made certain of that. As a wingman, I was hanging on to Ernie Mack. He was tracking a lone MiG at long range. I was on his left wing scanning his "three-to-six o'clock" area. Ernie fired at his MiG while at long range. I, however, must have watched him shooting for too long.
>
> When I awoke, after 15 or 20 seconds at most, I looked over my left shoulder and there on my left wing with his speed brakes open was another MiG not 15ft from us! He looked as if he was trying to join our flight. As I watched, it was clear he was unable to slow down and would overshoot our formation. He closed his speed brakes and accelerated up and away to our left. As he did so, I yelled "Awning Blue Lead", we have a bandit at "ten o'clock." He is really close! Take him!" But by the time Ernie shifted from his first target my MiG "wingman" was long gone.

2Lt Walter speculated that the MiG pilot, who could have shot both of them down, might have had jammed guns or had forgotten to arm his switches:

> But I did get a very close look at that MiG-15. Its pilot was wearing a black leather helmet with a black oxygen mask and his eyes were as big as saucers, just like mine! It would have been a simple task for me to open my speed brakes, slide in behind that MiG and shoot at him at point blank range. I did not because we wingmen were ingrained to call targets to our leaders and not shoot unless it was a question of safety or we had been instructed to do so by our leaders.

General Electric Radar Technical Representative Lee Fournier poses in front of Capt James Jabara's F-86A-5 49-1319 at Suwon in May 1951. Both NAA and General Electric provided expert help in the field with their small army of "Tech Reps," who helped keep the F-86s in the air throughout their tenure in Korea during the war. This aircraft later crash-landed on a sand bar in the Chongchon River after suffering battle damage on October 6, 1951. Retrieved by the KPA, it was sent to the USSR for evaluation. (USAF)

2Lt Dick Merian also recalled being "close enough to see the pilot's black leather helmet and see where the Russian star had been removed from the side of the airplane and replaced with a NKPAF insignia."

Having been involved in some of the earliest aerial engagements between the F-86A and the MiG-15, 2Lt Walter gave a succinct summary of the Sabre's advantages as he saw them:

> We all loved the F-86, and we quickly realized that there was only one advantage that the MiG-15 possessed. The MiG could outclimb us above 28,000ft, but we would never have traded this feature for our precious ability to out-dive and thereby out-accelerate the MiG. This allowed us to disengage at will when things turned sour and come back to fight another day. This saved many American pilots' lives.
>
> There was literally nothing we yearned for. We knew we had the better aircraft by far. Furthermore, the MiG pilots did some incredibly stupid things in combat, although there were a few very good ones, which I personally never encountered. During my tour in Korea, however, I saw no change in MiG aggressiveness. Most of all they were unpredictable. This led us to believe we were encountering a mix of instructors and students. We felt the North Korean and/ or Chinese pilots were being trained

by the Russians, and when a new class was ready for its final exam their instructors brought them south of the Yalu for a fight. We were often frustrated during those days because they came over so infrequently.

By June 1951 it had become obvious to the 4th FW that recently trained PLAAF and NKPAF pilots were being used to attack the fighter-bombers while "Big Team" Soviet pilots – often instructors or "honchos" – engaged the Sabres. However, the 4th FW's superiority remained intact, with the wing being credited with 23 MiG kills by the end of May for one confirmed loss in aerial combat. This tally was achieved with only two of the wing's three squadrons being in-theater at any one time, the third being held in reserve in Japan. Sabre numbers remained low, even into early 1952 after the 51st FW arrived, partly due to maintenance difficulties. Typically, less than 90 aircraft were available to the FEAF.

Another major air battle occurred near Sonchon, in northwestern Korea, on July 11, 1951 when a large F-80C force attacking targets in the Anju area was intercepted by 26 MiGs from 324th IAD. 2Lt "Lon" Walter was "Dignity White 2" that day, flying as wingman for Capt Bruce Cunningham:

We were at 28,000ft listening to radio chatter that indicated a fight was going on nearby. We were trying to find it but, as sometimes happened, we became separated from the other participants shortly after the fight began. I was flying almost line abreast on "White Lead's" right wing in an absolutely clear blue sky. We were flying at about Mach 0.85. Suddenly, I saw what looked like pink Roman candle balls flashing between our two Sabres. These were, of course, 37mm tracers. I followed the tracers back to their source, which was a MiG-15 firing away, but he was too far out of range. He was alone. I called "'Dignity White Lead,' we have one shooting at us at 'six o'clock', but he's way out." Bruce replied, "I do not have him, so keep him in sight."

The MiG continued firing, and he was closing on us much faster than I thought. I also realized that he had shifted his aim to my direction! I called again, "'White Lead', break left. He is firing at ME!" Bruce broke so hard that we later found that he popped rivets in his ailerons, and I thought I would black out trying to stay with him.

As I pulled into my hard turn the MiG passed between us. He overshot badly. This MiG had North Korean markings and a red nose. Then he made a second mistake: he headed down. Since Bruce was turning away from the MiG he could not see this, but I was in a perfect position to take the MiG. I called, "'White Lead,' I am on the MiG. We are headed down." Bruce replied, "Okay 'White Two', you take him. I will cover your wing."

This was my first and, as it turned out, only chance in Korea to be a "shooter." It was easy to stay close behind the MiG as he stayed in a descending left turn. I actually had to reduce power and use my speed brakes to avoid over-running him. But, unfortunately, my lack of training hindered me. I could not find the gunsight image in my windscreen!

In later years I became an excellent aerial gunner, and I often reviewed my engagement with this

MiG with deep regret. I was *so close*, however, and began blasting away, but as I now know I was shooting behind the MiG. He was obviously scared and he kept turning tighter and tighter as we picked up speed in our diving turn. Suddenly, and with great quickness, the MiG snap-rolled and went into a flat spin. This happened so rapidly that I almost collided with the MiG, which seemed to have stopped in front of me. Instinctively, I squeezed the trigger and pulled hard on the stick. This corrected my previously poor shooting, and I walked my machine gun fire across the MiG immediately behind his cockpit as I zoomed past him, barely avoiding a mid-air collision. I observed several armor-piercing incendiary strikes, but I was now so low on fuel that I could not stay any longer, and so I returned to Suwon.

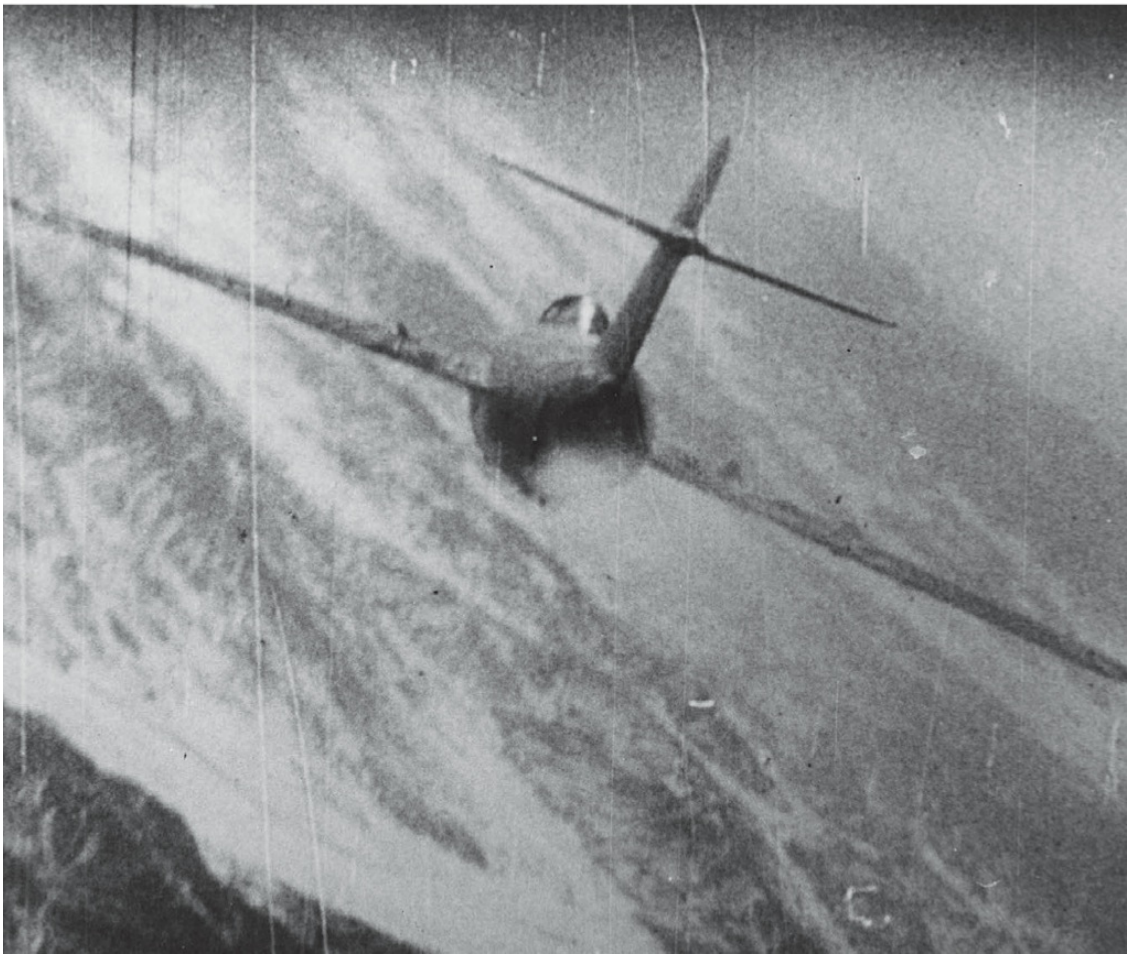
Later, during our debriefing, I claimed the damage I observed on the MiG. Two were shot down that day, and were confirmed by other pilots. Strangely, another pilot reported that as he returned, he observed a single MiG heading north, and he saw the pilot eject for no apparent reason. One of our debriefers asked me if

PIONEER MiG ACE

Having shot down his fifth MiG during the late afternoon of May 20, 1951, thereby becoming the first "ace" of the jet age, Capt James Jabara of the 334th FS/4th FW dived solo after his sixth in F-86A-5 49-1318 as his wingman, 1Lt Salvadore "Jack" Kemp, had become separated early on in the engagement. By then more than 50 MiG-15s were dogfighting Sabres high above "MiG Alley."

Jabara hit the aircraft flown by Capt V. A. Nazarkin of 196th IAP, causing white smoke to stream from its jet pipe. The MiG-15 entered a terminal spin, slowing to 195mph. Jabara followed it down to 6,500ft, at which point he was suddenly aware of red tracers passing close to his aircraft. Jabara had become the target for future five-victory ace Capt Boris Abakumov and his unnamed wingman. The newly crowned ace found it difficult to maneuver because his right external fuel tank had remained stubbornly under the wing when he tried to jettison it earlier in the action, so his jet kept dipping to the right.

After a tense chase, Jabara was rescued by squadronmates Capt "Mo" Pitts and 2Lt Rudy Holley, who chased the MiGs off his tail, damaging one. Nazarkin ejected and his jet exploded at 3,500ft. Soviet sources claimed that Jabara's fifth victim, Snr Lt Mikhail Zykov, flew his damaged MiG back to Antung despite having suffered severe wounds during the clash.



A Sabre's bullets chew into a MiG-15 at close quarters, wreaking damage on the wings and engine. Although the victim in this grainy gun-camera shot was one of Capt Manuel "Pete" Fernandez's 14.5 victory claims from 1952–53, it nevertheless shows how most Sabre pilots favored combat at close quarters to maximize the effect of their machine guns. (Alamy D5 YOXN)

I was sure I had not seen my MiG pilot eject. I had to reply that I did not. Bruce said he watched the MiG recover from its spin and head north, but he was unable to give chase. I have always thought the odds were good that the "unforced" ejection was my MiG target, but I will never be able to prove it. The damage I inflicted, or the damage caused by the high-speed snap roll, most likely convinced the

pilot that his aircraft was too badly damaged to land.

The Soviets conceded two losses that day to 1Lt Ralph "Hoot" Gibson (his third of five MiG kills – he was the third 4th FW pilot to "make ace" in Korea, on September 9, 1951) and Capt Milton Nelson. One Sabre was lost in return when 2Lt Conrad Allard failing to recover from a flat spin in 48-297 as he headed back to base.

The latter aircraft was probably damaged by Lt Col Evgeniy Pepelyaev, commander of 196th IAP. He described becoming separated from his flight and losing his wingman, Snr Lt Larionov, to Capt Milton Nelson. Alone, he came under fire from two Sabres and threw his jet into a spin, entering cloud cover at 9,000ft pursued by a Sabre that could not catch him. He eventually pulled his MiG out of the spin and flew it back to Antung, where several bullet holes were found in the aircraft. The mystery of the ejecting MiG pilot therefore remains, but it is possible that 2Lt "Lon" Walter came very close to shooting down a top Soviet ace that day.

The following month, on August 18, recently promoted Capt Dick Becker took his tally to four MiG victories during a mission to the Chongju region:

> I had a flight of four. There were eight MiGs. We climbed behind them when they did not see us and got within 1,200ft before they turned. I closed to 500ft and hit the leader. He immediately snap-rolled to the right and ejected. His wingman turned straight and level. He was no problem. I hit him hard and he blew up in my face.

Both 18th GvIAP pilots, Capt. V. A. Sokhan and Lt V. Kondrashov were able to eject safely.

Bomber Escorts

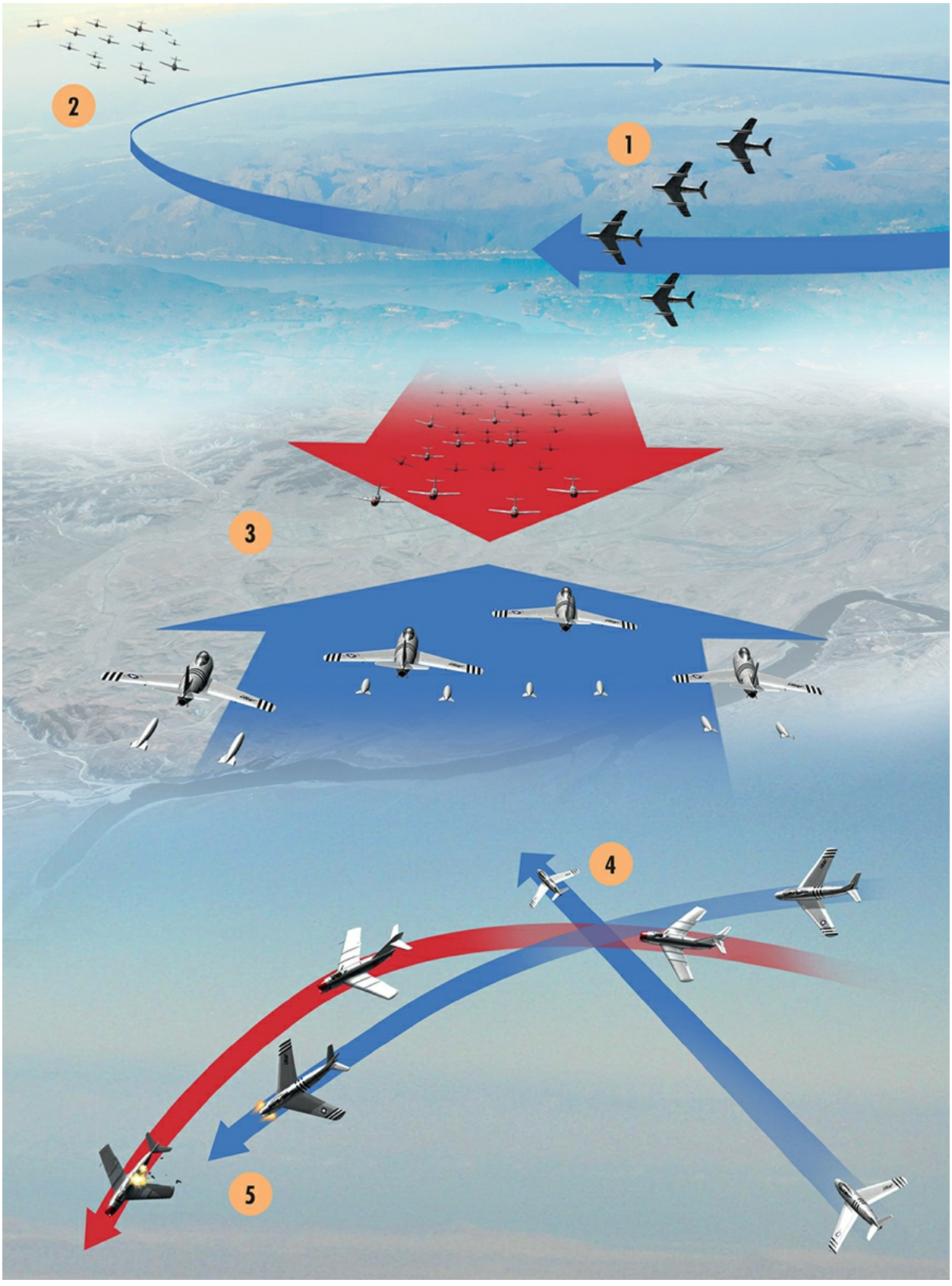
Sabre escorting for B-29 attacks had resumed in late March 1951 once the 4th FW had re-established itself on the Korean mainland, the F-86s relieving the F-80s which had temporarily taken on that role when the wing had been forced to move to Japan. Protecting B-29s was the original purpose of the Sabre deployment to Korea.

An unprecedentedly intense air combat incident against the best-defended target in North Korea occurred on April 12, 1951. A re-attack on the remaining bridge at Sinuiju resulted in heavy losses when the MiGs intercepted 39 B-29s

with 54 27th FBW F-84Es (known as "crosses" to Soviet pilots) as close escort and 24 Sabres from the 334th and 336th FSs as top cover. Soviet radar picked up a large group of aircraft advancing quite slowly, and correctly assumed they were B-29s.

MiGs scrambled in two waves of 14 aircraft five minutes apart, with a third wave of 12 taking off 23 minutes later. 176th GvIAP took off first (with Maj Konstantin Sheberstov's 1st squadron leading the 2nd and 3rd squadrons aloft), followed by 196th IAP. All available MiGs – 44 in total, leaving just two behind for airfield defense – were scrambled.

The first two squadrons from 176th GvIAP employed new tactics, their pilots climbing to 25,000ft and then diving at high speed through the escort to attack the bombers. They were in turn pursued by the Sabres. The 3rd squadron was tasked with engaging the diving F-86s from higher altitude, and it followed them down into a frantic melee. Six B-29s were lost and others received severe damage. Four MiGs were credited to Meyer, Jabara (his third), Capt Howard Lane, and Lt Col Bruce Hinton, although Soviet reports stated that the MiGs were only damaged.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1140hrs, JUNE 18, 1951

NEAR SINUIJU

1 A flight of 335th FS F-86A-5s is performing a fighter sweep near "MiG Alley." The formation leader is squadron CO, Lt Col Ben Emmert, and the element leader (No. 3 in the four-ship) is 1Lt Ralph "Hoot" Gibson. His wingman (No. 4) is 1Lt Jim Heckman. Having reached the Yalu River, they start orbiting overhead at 44,000ft.

2 On their second oval-shaped orbit, Gibson spots MiG-15s from 324th IAD approaching at their "three o'clock" position.

3 Emmert tells his pilots to jettison their underwing tanks as he turns the four Sabres towards the MiGs. "As they got closer, we could see that they were a very large group, and the closure rate between us and them had to be about 1,200mph," Gibson later explains. "We met more than 50 of them head on!"

4 Gibson turns to attack a MiG as it makes a hard left turn, and although he scores some hits, his high-G turn makes the gunsight wander off target and he overshoots.

5 Gibson passes the MiG to his wingman (1Lt Heckman), who manages to follow the jet in a hard left diving turn and hits it repeatedly. The MiG is seen to crash.

6 Gibson sees another MiG below and to the right and fires two long bursts at it from 700ft without a gunsight – the latter had failed in the previous engagement and he could not get it to reset.

7 The MiG rolls inverted, "with large pieces tearing off of the aircraft and smaller bits flying off into its jet wash. One final burst tore the entire right wing off, and it spiraled down and crashed."

8 Seconds later, Gibson and Heckman see Emmert being pursued by a MiG.

9 Gibson, after following the enemy fighter through several evasive maneuvers, opens fire and scores hits "all over the cockpit, fuselage, and wings."

10 The MiG catches fire and enters a steep dive, before exploding at an altitude of 3,000ft.

11 Having escaped his pursuer, Emmert joins Gibson and Heckman as they spot yet another MiG. Emmert subsequently shoots it down following a brief tail-chase.

Escort missions for increasingly vulnerable Superfortresses mounting daylight raids deep into enemy territory continued through to the end of October 1951, when the FEAF switched the bombers to night raids only. With MiGs usually reacting to the presence of B-29s over North Korea, 4th FW pilots were guaranteed action. 1Lt Robert Makinney of the 334th FS described one such eventful mission on July 8, 1951, when the bombers were targeting Pyongyang. It proved to be one of the 4th FW's best escort missions to date, with 1Lt Dick Becker downing the jet of Capt P. P. Pavlovsky and veteran ace Col Francis Gabreski claiming the first of his 6.5 MiGs. Becker later recalled:

The first MiG kill of 1951 was not claimed until March 31. It fell to Flt Lt J. A. Omer Levesque of the RCAF, who was undertaking an exchange tour with the 334th FS. He had previously participated in the 4th FW's first combat mission on December 17, 1950, and his March 31, 1951 clash with a MiG-15 resulted in the only loss admitted by the Soviets that month. This success made Levesque an ace, as he had claimed four victories during World War II. He is seen here with one of the first 33 production F-86A-1s, which had snap-open, drag-reducing external gun doors that were sometimes shot off and prevented gun cooling. Discontinued in March 1949 from the F-86A-5 onwards, they were officially replaced by plastic plugs in the gun muzzles. (USAF)

We left K-13 to the south, joining up in squadron formation as we made a 180-degree turn and started north in a 16-ship formation. I was wingman for Col Francis Gabreski, who had recently been assigned as deputy wing commander for the 4th FW. He would lead the mission, and his call-sign was "Dignity Mike," or "Dig Mike." We climbed out on a northwesterly heading, crossed the Haeju Peninsula, and leveled off at 25,000ft. We rendezvoused with the B-29s as they crossed just north of Chinampo. We crossed over the B-29 formation and immediately set up a race-track pattern to the north of the B-29 flightpath. Approaching the target, the radio chatter intensified, and we began to see puffs of dirty black smoke – flak – both above and below the B-29s.

The B-29 commander, callsign "Jakeman," sent an advisory transmission that the bombers were at point "Windy," five minutes from bomb release, as a warning to the F-51D flak suppressors to clear the area.

As soon as the B-29s had crossed the target and released their bombs, we made a turn to the south. "Filter Lead," the flak suppression flight, suddenly called "'Dignity,' we have bandits in the area." We continued our escort pattern until the B-29s were well out of the target area, then Gabreski called, "'Jakeman,' this is 'Dig Mike Lead', we have you clear of the area. We'd like to break off and go help 'Filter.'" He made a hard turn back towards Pyongyang and called "'Dig Mike,' drop tanks and let's go 100 percent." With the increase in power, and having lost our drop tanks, we started to accelerate immediately and initiated a climb to altitude. Within a few minutes we were nearing Pyongyang from the southeast at about 0.92 Mach and going through 30,000ft.

Without warning, "Gabby" dropped his nose and brought his power back to idle. It was obvious that he'd had a problem or had seen something. It was the latter, and I still had not seen a thing. We were now in a shallow dive and had accelerated to about the F-86A's maximum speed, descending through 20,000ft. "Gabby" started firing at something that was at excessive range. I could see the smoke around his gun ports, blowing back across the fuselage. I slid in closer to

"Gabby's" tail, about 50ft below and behind him, as he fired a second burst, and there it was – a MiG. I could see "Gabby's" tracers light up the MiG all along the trailing edge of his right wing. The MiG pulled up sharply and "Gabby" followed, firing again and scoring more hits on the fuselage. With his greater airspeed because of the dive, "Gabby" overshot the MiG, sliding past him.

I maneuvered my Sabre into a position where the MiG was in my gunsight. I was sorely tempted to fire, but instinctively thought it was "Gabby's" kill, not mine. More importantly, I was a wingman. My leader was ahead of me and needed me to keep him clear. Without another thought I added power, slid past the MiG, and rejoined "Gabby", who was in a right turn looking for other bandits. As I flew past the MiG he had rolled inverted, starting an almost vertical dive. I was sure he had lost his engine and would ultimately crash.

I had just regained my position on "Gabby's" wing when he again dived for the deck. This time the descent was much more gradual. As we leveled off at about 6,000ft he opened fire on a MiG at a range of about 1,500ft.

Pilots and maintainers from the 4th FW discuss Capt Jabara's May 20, 1951 "ace-making" mission shortly after his return to Suwon. The "hung" fuel tank that remained with 49-1319 throughout the mission can be clearly seen here still firmly attached to the underside of the right wing. (USAF)

I watched as numerous pieces of the MiG's tail started to come off as "Gabby's" rounds found their mark. The MiG took no evasive action, continued a slight descending path, crossed the Taedong River, and crashed into a hill on the south bank. At this point we were both at very low altitude, both at bingo fuel, and the radio chatter had subsided to the point where it was obvious that the MiGs had left.

As we climbed back to altitude en route to Suwon, I asked "Gabby" "Was that two?" He replied "Negative," and said nothing further all the way back. At the debriefing he explained that he had attacked a single MiG which dived for the deck and leveled off, probably hoping to escape another beating like the one he had just sustained. But "Gabby" saw him again. It's highly unlikely that he would have been able to make the 100-mile flight back to Antung anyway. "Gabby" got the kill and I was a good wingman, which is what they were paying me for at the time.

The Soviets conceded that the second 523rd IAP MiG was lost after the pilot, Snr Lt Aleksei Obukhov, was killed in his cockpit, but Gabreski's first target apparently did survive.

The problem of escorting B-29s over the most heavily defended areas of northwest Korea came to a head in the fall of 1951. Three new jet-capable airfields at Namsi, Taechon, and Saamcham (fairly close together and south of the Yalu River) extended the range of MiGs intruding from over North Korea. It was believed that they could also possibly accommodate bombers. Heavy, regular airfield attacks were therefore planned by the FEAF. Fortunately, the units at these bases were manned by "green" NKPAF pilots and not veteran Soviet aviators, who remained near Antung.

Saamcham, detected on September 27 by an aircraft from the 67th Tactical Reconnaissance Wing, revealed a 7,000ft paved runway with heavy defenses. It was the first of the airfields targeted in October, with a successful attack mounted by B-29s from the 19th BW, whose aircraft were escorted by F-84s and RAAF Meteor F 8s. MiGs were not scrambled to meet them. However, other missions during the course of the month resulted in the USAF suffering its worst losses to MiGs of the entire war. Fourteen aircraft (including seven Sabres) were downed, with 35 MiGs claimed in return – 24 of them fell to F-86 pilots.

The highest-scoring surviving USAAF ace of World War II, Col "Gabby" Gabreski (right) returned to combat with the 4th FW in the summer of 1951 and achieved his second MiG kill on September 2 that year. He is seen here one week later congratulating the USAF's second and third jet aces, 1Lts Dick Becker (far left) and Ralph "Hoot" Gibson. (USAF)

The worst casualties came on October 23 – known as "Black Tuesday" – when nine 307th BG B-29s with 55 F-84E escorts attacked Namsi airfield.

Thirty-four 4th FW F-86s covered four different areas of "MiG Alley" during the course of the mission. For most of the F-84 pilots, used to ground-attack operations, this was their first escort mission.

The Sabres were met by 44 patrolling MiGs of 303rd and 324th IADs. Twelve more MiGs were on standby in Manchuria. As the B-29s approached Namsi, Soviet-flown fighters approached their V-formations from the east at 35,000ft, while up to 100 NKPAF and PLAAF MiGs diverted the F-86 screen by circling above the USAF fighters. Breaking into two-aircraft elements, the Soviet-flown jets dived through the 136th FBW F-84 screen in order to scatter their flights, before lining up behind the B-29s. No MiGs were tasked with meeting Sabres, as all Soviet pilots had been instructed to exclusively attack the B-29s.

The F-84s responded as the MiGs made their firing passes, shooting down one of the communist fighters, but the lead B-29 was hit as it approached bomb release and the formation was broken up. Three bombers were shot down and all of the remaining aircraft were badly damaged, returning with dead and wounded crew on board. Despite their losses, the 307th BW commended the F-84 pilots on their spirited defense, and commented that at least 150 Sabres would have been needed to keep the MiGs away.

For Soviet pilots in-theater, B-29s were primary targets to avenge the destruction they had wrought on North Korean cities. After a final attack on October 28, Gen Vandenberg halted daylight B-29 raids. The eight bomber losses in a month and 55 aircrew casualties were a further incentive to release F-86Es for Korean service to protect precious Strategic Air Command (SAC) assets.

The 4th FW's Unit History included the following brief report on the October 23 attacks:

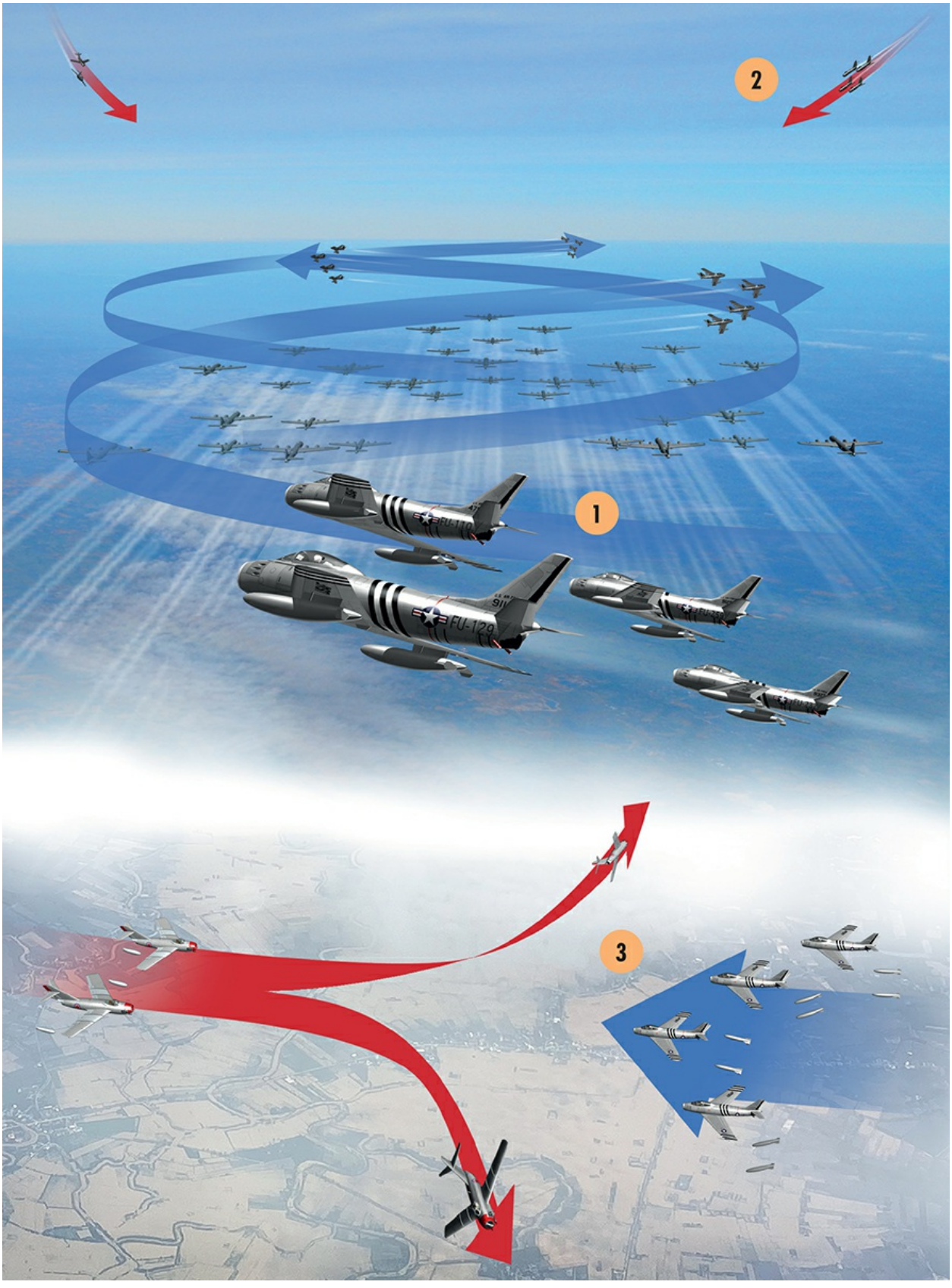
> The MiGs were aggressive and in numbers which made possible the temporary supremacy of the enemy in aerial warfare over North Korea. Their tactics seemed to be well-planned, their formation appeared excellent, and their discipline appeared superior to that seen so far in the Korean War. Enemy aircraft were in sufficient numbers to engage the F-86s in areas away from the bombers. These factors could well presage a new phase of aerial warfare over North Korea.

Sabre pilots were enraged when SAC's commanding officer, Gen Curtis LeMay, blamed them for the loss of his bombers, accusing them of a "lack of

aggressiveness." The same 4th FW report commented:

> Throughout the war there has been a lot of speculation as to why the F-86s don't shoot down a lot more MiG-15s. From infrequent reports received here from the United States it seems that our inability to kill a lot more MiGs has been blamed on everything from airplane instability to gunsight trouble and lack of pilot ability or aggressiveness. Almost all the experts, except those that actually fought here, looked at everything but the thrust coming out of the jet pipe. Give us the ability to match the MiG-15 in climb, ceiling, and top speed and we can double and triple our kill rate. Give us an advantage in these flight characteristics and a MiG won't come south of the Yalu River after first contact. When a man goes hunting with a gun, he's got to get close enough to whatever he's after with that gun to kill it.

Sabre pilots would have to await delivery of the F-86F from June 1952 to achieve that parity, but for LeMay the credibility of his B-29s was seriously eroded. 1Lt Dick Becker summed up the escort dilemma: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LATE MORNING, MARCH 31, 1951

YALU RIVER

1 Four flights of four 336th FS F-86A-5s, led by Maj E. C. Fletcher, are flying at 40,000ft as escorts for a formation of 19th BG B-29s some 20,000ft below them. The bombers have been tasked with targeting bridges spanning the Yalu River at Linchiang. The Sabre pilots weave from side to side in order to keep their speed down and remain in position above the appreciably slower Superfortresses.

2 Fletcher, leading "Red" Flight, sees four 151st GvIAD MiG-15s from Antung approaching from his right. Two more MiGs are then seen approaching from the Sabres' "nine o'clock," just off their left wings and slightly above them.

3 Fletcher orders drop tanks to be jettisoned. He then leads his flight towards the pair of jets to their left, and as they converge head-on, the MiGs split up and climb to the left and right.

4 Flt Lt J. A. Omer Levesque, flying as wingman to Fletcher, follows one in a climb. "My MiG pulled up into the sun, probably trying to lose me in the glare", Levesque later recalls. "That was an old trick the Germans used to like to do [in World War II], but this day I had my dark sunglasses on, and I kept the MiG in sight."

5 Levesque adjusts his gunsight for deflection shooting as he banks steeply inside his opponent's left turn.

6 The MiG pilot dives, and the two fighters become involved in a descending spiral engagement, taking them from 40,000ft down to 17,000ft.

7 Levesque opens fire with six deflection shots as he turns inside the MiG. "I guess I was about 1,500ft away from him," he subsequently explains. "I hit him with a good long burst, and he snapped over in a violet roll to the right. I must have hit his hydraulic system, because I saw the flap on his left wing drop down alone."

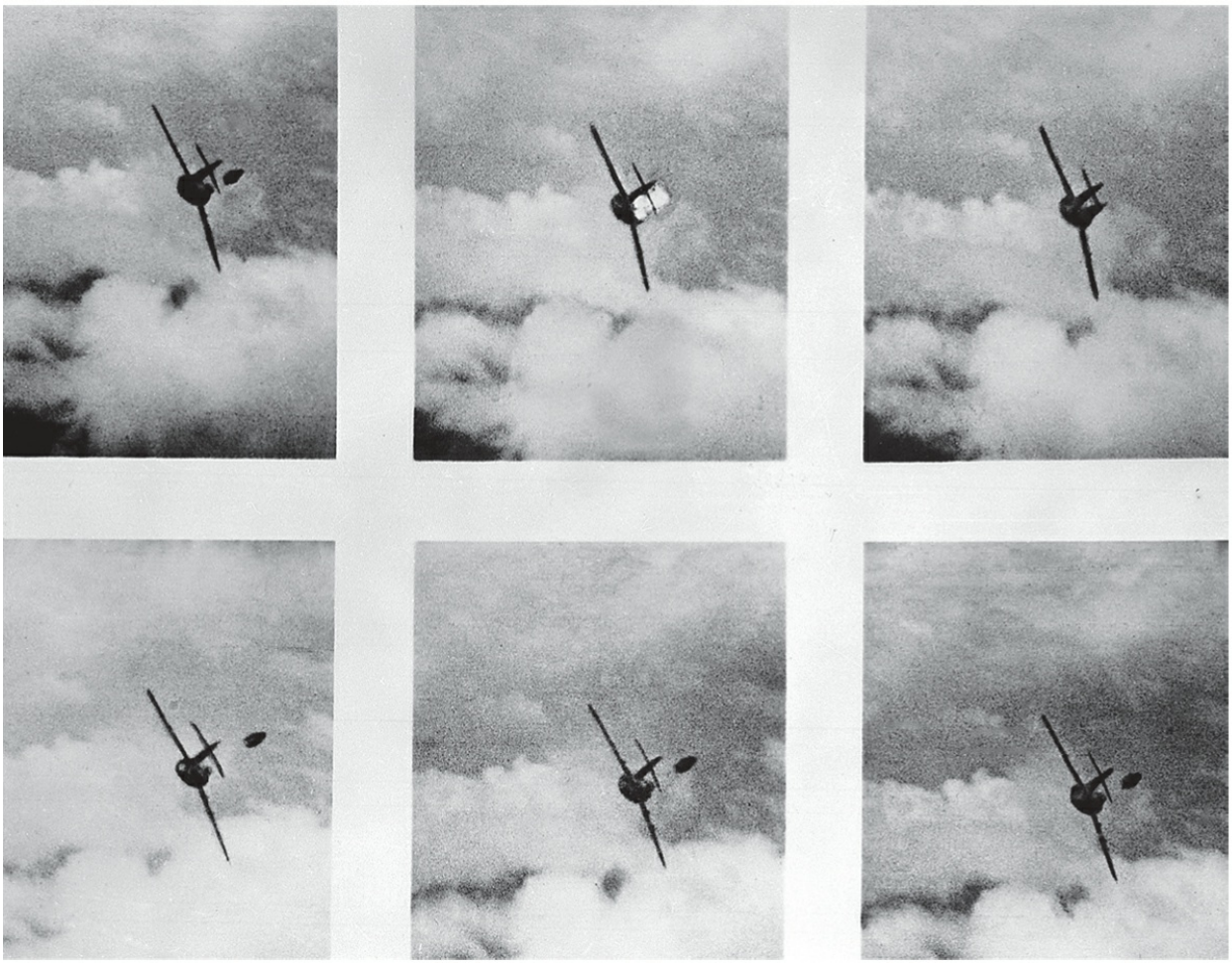
8 The destabilized MiG rolls to the right and spirals away in flames.

9 Another MiG dives to attack Levesque, and he climbs steeply into the sun, performing a series of barrel rolls to escape until he is forced to pass through the B-29 formation. "They all shot at me! Thank God they missed. I waggled my wings and they stopped firing, but lots of shells had just missed me." By then the chasing MiG has disappeared.

F-86A-5 49-1236 was assigned to the 336th FS and lost on October 24, 1951 near Sinanju when 1Lt Bradley B. Irish and his wingman 2Lt Fred T. Wicks (in 49-1109) were bounced and shot down by Snr Lt Dmitriy A. Samoylov of 523rd IAP. Both pilots became PoWs, and they were repatriated in September 1953. 2Lt Dayton Ragland's F-86A was damaged by Samoylov's wingman, Snr Lt Mikhail A. Zykov, in the same engagement. (Terry Panopalis Collection)

> It was not like World War II because we escorted B-29s and we were so much faster. We engaged as many MiGs as possible so they would not attack our B-29s. I remember, however, one mission where I watched three B-29s go down. I saw all three crews bail out. There must have been 90 to 100 MiG-15s attacking those B-29s, and we were only 16 Sabres. B-29s engaged the MiGs but could not defend against them.

Becker compared the MiG attacks with German Me 262 interceptions of B-17s and B-24s in 1945, although the Soviet jets were far more numerous. By September 1951 FEAF's reconnaissance indicated that there were 525 MiGs in the Manchuria area compared with only 89 Sabres in-theater, just 44 of which were based in Korea.



An F-86's gun camera sequence caught this MiG-15 pilot ejecting after his aircraft was hit in the engine (top centre). A MiG-15 pilot sat low in his pressurized cockpit, with no reliable rear-view mirror and poor visibility downwards and to the rear due to the tailplane and heavy canopy rear frame. A three-inch-thick windscreen gave protection, but because pilots were trained to attack bomber targets frontally and avoid maneuvering fights, no armor plating was provided behind the seat back. Units flying over North Korea duly installed this in the field. (Terry Panopalis Collection)

Sabres also protected fighter-bomber strikes, and they were so successful during an attack on the Supung hydro-electric plant in June 1952 that MiGs did not even attempt to intervene. By the late summer of 1952 US air superiority, particularly using the improved F-86F, had been conclusively achieved, and communist forces did not use their superior numbers to challenge it more thoroughly or attempt to attack the vulnerable US airfields in South Korea with anything more than nuisance raids.

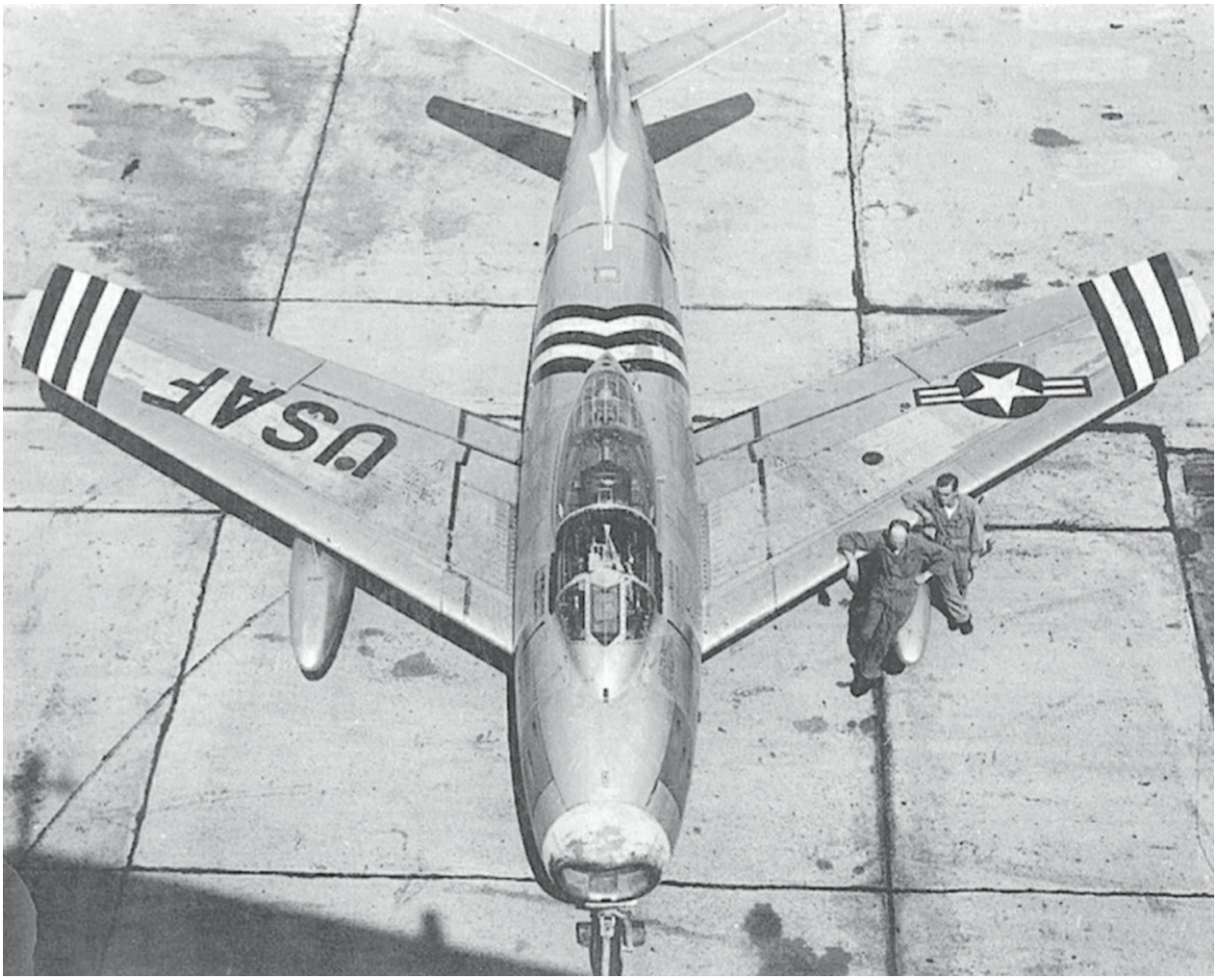
AFTERMATH

In 2022 the art of dogfighting lives on, despite the availability of all-aspect missiles and helmet-mounted displays. Pilots can now tackle an adversary in a "single circle" (radius) or "two circle" turning fight, using their fighter's tremendous power and ability to maintain a stall-free high angle-of-attack, and pointing the aircraft at their opponent within a few seconds of the first turn. Alternatively, they can use the excess power for prolonged vertical fights.

Korean War pilots, with comparatively low-powered, non-afterburning engines in fighters that became uncontrollable under excessive g, had to use conventional air-to-air tactics. However, higher speeds made dogfights more challenging.

The Korean air war is the largest air-to-air jet conflict to date, including Vietnam. It enabled test pilot and tactician Col John R. Boyd to formulate his "OODA loop" (observation, orientation, decision, action) which became the basis of fighter tactics and influenced the design of subsequent air superiority fighters.

The war also highlighted basic communications problems that could change the course of a fight. Pilots in those early Korean fights had to cope with radio failure and recognition problems due to the basically similar outlines of the MiG-15 and F-86, sometimes leading to "friendly fire" tragedies. Conspicuous "invasion stripes" on Sabres and red noses and tails for MiGs were sometimes not enough. F-86 pilots got used to fighting at the extreme end of their tactical range, knowing that communist pilots were usually a few miles from their own bases. They also quickly learned that, while the heavier Sabre might dive faster than a MiG, the Soviet fighter could easily out-climb an F-86 and patrol at higher altitudes, awaiting the ideal opportunity to strike.



Grayish-white intake lips were peculiar to early F-86As only, replacing the squadron-color nose bands that originally decorated the 4th FW F-86As until red-nosed MiG-15s appeared at Antung. The Sabre's resemblance to the MiG-15 caused several F-80 and F-84 pilots to fire at them if the USAF jets got too close while they were escorting the fighter-bombers. RAAF Meteor pilots who were often involved in the same missions had no difficulty in distinguishing the differences between the two jets, however. Watching for the different gunfire pattern (slow cannon versus rapid machine gun) was one identifier, but six-inch black and white "D-Day" stripes helped. (USAF)

As for confirming MiG kills, the communist pilots' proximity to their bases meant that they could often take a damaged jet home in circumstances where a US pilot might have assumed it was diving to its destruction. USAF pilots were not permitted to cross the Yalu River to check whether their victims had crashed. Often, there was insufficient evidence from gun camera footage or eyewitnesses in the heat of conflict to confirm a kill. This led to exaggerated claims by both sides. The USAF's wartime claim of a 10-to-1 or even 12-to-1 kill ratio in its favor was later reduced to around 5.8-to-1 when Soviet and UN

Allied statistics could be examined more closely.

Similarly, the MiG squadrons claimed more than 200 F-86As destroyed in the first 18 months of combat when the USAF actually lost 47 to all causes, and registered only 21 Sabre losses to MiG-15s during that time. Overclaims, albeit less numerous, would continue to occur in future dogfights, regardless of how stringently the rules of confirmation were applied.

Whatever tactics were in play, a dogfight was hard work, as 1Lt Dick Becker recalled:

> The ultimate goal of a fighter pilot is combat. After our first four or five missions, combat became like a boxing match. It was either him or me, while protecting my wingman, but it was a fight to the death. It was also a short fight. Sometimes during an entire day of combat, a dogfight may last only four to eight minutes, but it was so violent that we were exhausted when we landed.

Pilots of 21st century fighters would tell a similar tale.

Air power severely restricted the communist protagonists' political ambitions and exacted a huge cost for their attempts to occupy South Korea. In the long term, the outcome of the war was that South Korea developed a successful economy while the North entered a steady decline. Post-war, the USSR and the West focused on developing supersonic fighters with missile armament for long-range interceptions, but the Vietnam War a decade later showed that there was still a place for gun-armed, agile aircraft engaging in well-established dogfighting maneuvers at close quarters. One of the most successful fighters in that conflict was the MiG-17, a close relative of the Korean War MiG-15, while the USAF struggled to defeat it with much heavier and far more complex combat aircraft.

Wreckage of MiG-15s was recovered from North Korea by a US salvage team on April 17 and July 20, 1951. However, the defection of Snr Lt No Kum-Sok in his fighter on September 21, 1953 gave the USAF an intact example to inspect and test. Seen here at Eglin AFB, Florida, in the mid-1950s complete with a dummy pilot, the MiG was adorned with full USAF markings, a "buzz" number, and the Air Research and Development Command patch. (Terry Panopalis Collection)

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Front Cover Artwork: Ten MiG-15bis fighters of the Soviet Military Air Forces' 196th IAP took off from Antung, in Manchuria, at 0930hrs on October 6, 1951 to defend the North Korean capital, Pyongyang, against a formation of 4th FW F-86As that were heading for the city. They met head-on over the Chongchon estuary at 26,000ft, and the MiGs attacked the Sabres. Lt Col Evgeniy Pepelyaev (commander of 196th IAP and formation leader) fired on his opposite number, Capt Gill Garrett of the 334th FS, who was at the controls of F-86A-5 49-1319, hitting the Sabre hard in the right forward fuselage.
Garrett, who was flying his 97th mission, dived away and was forced to crash-land on a sand bar in the Chongchon River, 30 miles northwest of Pyongyang. He was soon rescued by a USAF helicopter, while his near-intact Sabre was captured and shipped to the USSR for analysis.

Title Page: Of this pair of 336th FS/4th FW F-86As departing Suwon at the start of a mission in the summer of 1951, 49-1158 survived the war and subsequently served with the 186th FIS of the Montana Air National Guard, while 49-1227 in the foreground was lost on a combat mission due to the failure of its trim system. The pilot ejected successfully. (USAF)

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